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CONTENTS.

	PAGE
Editorial—James L. Robertson, V.S., M.D., D.V.S.	415
European Chronicles	419
Now Is the Time	432
A Tribute to the Memory of James L. Robertson from a Former Student	434
William Hunting, F.R.C.V.S.	436
Richard Glover, F.R.C.V.S.	436
Original Articles—The Diagnosis of Glanders. John R. Mohler and Adolph Eichhorn	437
An Analysis of Dr. McLaughlin's Paper on "The Tissue Medium." Thomas B. Kenny, M.B., Ch.M., M.D.	448
The United States Government Meat Inspection. Veranus A. Moore	458
Pure Milk Production and the Abortion Bacillus. E. C. Schroeder, M.D.V.	467
Elimination of Sources of Contamination in Milk. W. D. Frost, Ph.D., Dr., P.H.	476
Veterinary Legislation of the Future or the Duties of the Veterinarian of the Future. Walter G. Hollingworth, D.V.S.	484
Lameness of the Hip Joint. David W. Cochran, D.V.S.	491
Reports of Cases—An Outbreak of Tuberculosis in Pigeons. F. S. Jones	497
Lympho-Sarcoma in the Dog. A. Slawson, D.V.M.	501
Rigid Os Uteri in a Cow. S. J. Alcalay, D.V.M.	503
Azoturia Case in Rain. Jos. J. Smith, D.V.S.	504
An Anthrax Outbreak. Grover V. Love	504
Glanders	505
Abstracts from Exchanges—English Review. Prof. A. Liautard, M.D., V.M.	506
French Review. Prof. A. Liautard, M.D., V.M.	509
Correspondence	513
Army Veterinary Department	517
Society Meetings—U. S. Live Stock Sanitary Assn	520
Pres. Wm. M. Busson's Address before Georgia State Vet. Assn.	524
Central New York Vet. Med. Assn.	527
Veterinary Medical Assn. Meetings	529
Publishers' Department	530

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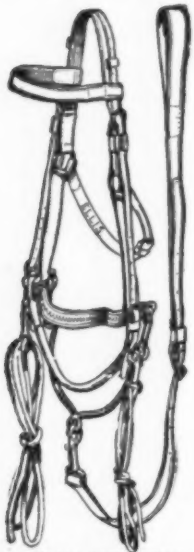

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JAMES LINDSAY ROBERTSON

AMERICAN VETERINARY REVIEW.

JANUARY, 1914.

EDITORIAL.

JAMES L. ROBERTSON, V.S., M.D., D.V.S.

He that the profession of America had familiarly called *Uncle Jimmy;* he that I called from the heart *my boy,* James L. Robertson, was buried on the 26th of November last, the day after Thanksgiving Day. The day of joy for so many, the day of sadness for the veterinary profession. On Thanksgiving Day the sad news of his death was sent to me, which told of the terrible loss that had befallen American veterinary science, that had deprived me of one of the most devoted friends that one could ever wish for.

The REVIEW has already paid her tribute to the memory of this noble veterinarian, no doubt in proper language; our general sorrow has been told and it is certainly superfluous to say more; yet, perhaps our readers will pardon an old man, one who guided his first steps in our profession, who was happy to look upon him as a worthy professional son, to say a few words of the one with whom he was so intimately related since his entrance in the little place of Lexington avenue, in 1865, the home of the New York College of Veterinary Surgeons, from where he graduated in 1867; and to speak of James L. Robertson as a student, then as a veterinarian and a teacher, and finally as a friend.

To say that James L. Robertson was a thorough, good and perfect student would say but little of him. Every one knows

that to study was his great joy and pleasure. At the time that he matriculated at the Lexington Avenue College there were but few students, the class was so small that often he alone was present at the clinics. But how he then seemed to take advantage of all the small number of clinical cases that were offered for his observation. How anxious he was to benefit by every opportunity. How happy he was when I told him to come and inspect a large herd of cows, which were suspected of tuberculosis, and with what satisfaction he noticed and examined the lesions that he found; many specimens of which he took for the museum of the college, where they must be to-day.

To learn, to investigate, to see and to profit by the opportunities offered were his great desire.

The resources of the institution were limited, and although the teaching was as good as the times and circumstances permitted, when Robertson received his diploma of V. S. he felt that his luggage of medical knowledge was rather slim, and for a man like him and with his tastes it was an obligation to seize every chance to improve. He therefore matriculated in the Medical Department of the University of The City of New York in 1867.

His studies and graduation as a veterinarian were of great advantage in the pursuit of his medical studies, and an M.D. degree rewarded him at the commencement exercises in 1869, and after a short time Doctor Robertson, V.S., joined the staff of House Surgeons in Charity Hospital, Blackwells Island, serving during 1869-70, familiarizing himself and completing his medical education; improving the application of the *general* principles he had gathered during the last few years.

He had been told, he had read, and learned, much of the diseases of both men and animals, he had seen and observed numbers of them as a veterinarian and as a physician; he had no doubt prepared himself well for the practice of medicine in a general sense, but with all these rich provisions, Robertson remained a student.

He knew that if the literature in medicine was rich in his

native language for human practice at least, it is very poor in that of his choice, the veterinary practice; and he must take advantage of what he may get in the literature of foreign countries. French and German he must learn, and he once again resumed his student's life until in a short time he became master of three languages.

His means of perfecting himself complete, he read and benefited in those different languages of the many professional facts that they possessed, and his efforts were well rewarded through his insatiable thirst for more knowledge.

Were those desires finally satisfied? If not, Robertson had selected long ago in what direction the application of all that he knew would carry him.

At first, when he had entered the University as a student, when he received his M.D., and when he was seen as interne in Charity Hospital, those of the veterinary profession who had watched him, who had kept close to him in their professional gatherings, bringing him with them, began to feel anxious, fearing that after all Robertson might give up veterinary practice and follow the practice of human medicine.

A good friend and a superior teacher of his, a veterinarian of ability and a physician, Doctor Large, joined in the efforts made by the Faculty of his Alma Mater, and Doctor Robertson became lecturer on Theory and Practice at the school from which he had obtained his first degree, his V.S.. Lecturer at the New York College of Veterinary Surgeons first, he became professor at the American Veterinary College, at which institution he received his addendum degree of D.V.S., in 1876, where principally began the period of his life as a teacher.

If there was a chance for one to illustrate the Chair of Theory and Practice, and continue and improve the good work started by his predecessor, that chance was offered to Robertson. He took it. He was the man for the position.

Educated with the help of English literature, improved by that of France and Germany, constantly reading veterinary journals from everywhere and from every country, Doctor Robert-

son could not fail but be a superior teacher. He was keeping himself in contact with every thing that was new in veterinary science; from a practical and scientific point of view he was the right man for that place.

His method was simple, and while I do not think he was a pompous speaker nor perhaps a brilliant lecturer, through his manner of describing, his select and properly applied delivery, his facilities in making clear every point where students might be confused and embarrassed, all those qualities can be recognized and remembered by the many graduates who have had him as a teacher, as having placed him in the first rank amongst teachers, and a master of superior ability.

His lectures will be remembered by all who have heard them, and I am sure that if any of his students have kept a good record of them they can boast of having a valuable work in the Practice of Veterinary Medicine.

For years Doctor Robertson has fulfilled his duties as few men have done, rarely missing his lecture hours, prompt at the time, and only when sickness disabled him was he absent. At the end of his active life he was made Honorary Professor of his Chair; and his departure will deprive his successor of a valuable assistant and kind adviser.

His activity in connection with association affairs began early in his professional carreer. In 1868 he was elected a member of the United States Veterinary Medical Association (now the A. V. M. A.); he served as its secretary from 1869 to 1874, and as its president from 1879 to 1881, and served on nearly if not all committees during his life time.

It remains for me to say a few words of Doctor Robertson as a friend. But how can I? What could I say to show him, not better, but even as good as we have all *known* him.

He was the friend of everyone and, above all, that of every veterinarian.

Veterinarians all over the country who have met him, members of the societies to which he belonged, of the different veterinary colleges that he visited, all of those who have known him

personally can vouch for his good, kind and superior qualities as a man, as a practitioner, as a teacher.

But few perhaps could speak of him in the true sense of the word, *friendship*. And yet how many could probably relate facts relative to that feeling as it existed with our dear departed. Whoever saw his sorrows at the possible failure of one of his intimate candidates for a degree! Whoever saw him with his broken down heart and terrible sadness at the death of his friend, Eugene Burget! Whoever heard him speak of the disgrace of a colleague who chanced to be an intimate friend of his! And how many more! All those would give a measure of what with him the word *friendship* meant With me, who since the day he entered the school in Lexington Avenue, when I learned to appreciate and to love him as he deserved, up to the moment I returned to Europe, and again in later years, I have found him the most sincere and most truthful friend I ever had. I may have (in very limited measure) contributed to the beginning of his professional life; but my feeble efforts have been largely rewarded by the forty years of his brotherly affection.

The veterinary profession has lost one of its best members—I am missing one who I will ever regret, and whose kind and good souvenir will always remain in my heart.

ALEXANDER LIAUTARD.

EUROPEAN CHRONICLES.

PARIS, 15th November, 1913.

GENERALIZED MYCOSIS IN CATTLE.—*In Hygiene de la Viande et du Lait*, there has been published an observation of unusual interest, revealing the presence of pulmonary, sub-dermic and muscular lesions which bring before the veterinarian the

possibility of a very different form of disease than when tuberculosis was at first suspected. On account of the importance of the subject, I take pleasure in extracting from the article the most important points. The author, Mr. Langrand, who is Chief of the Laboratory of the Sanitary Veterinary Inspection, writes:

"In veterinary pathology, the diagnosis of sub-dermic lesions of bovines presents great difficulties, as in all cases the questions of tuberculosis or mycosis being present have to be settled.

"If the previous and most recent works have given to our literature the interesting chapter of the *Tuberculides,* they have also demonstrated that the research of the bacillus of Koch in the sub-dermic lesions is not always followed by success.

"And as besides, we have but little information on the subject of the external lesions of mycosic origin *in bovines,* the difficulty is great when one is in presence of undescribed aspect and not giving the bacteriological prooof of tuberculosis.

"Such is the case in this relation."

*
* *

Clinical Aspect.—"The subject presents subcutaneous nodules, very hard, not adherent to the dermis, varying in size between that of a pea to that of a large nut, round or oblong in shape, and disseminated over the entire surface of the body, even over the limbs. An indurated lymphatic cord is observed in the carpal region, uniting three of these nodules. The skin over the lesions, is intact and the presence of larvae of vestic cannot be entertained. The subcutaneous lymph glands are normal.

Perfectly distinct from each other, the nodules, which are in great number principally on the neck, are isolated in spaces in the intermaxillary space, the abdomen and the perineum. The animal is thin and coughs. The palpation of the retro-pharyngeal, subglossal and parotid lymph glands reveals no adenitis.

Few nodules seemed encapsuled more deeply in the tissues;

on the cadaver some are indeed found in the thickness of the superficial muscles of the chest, of the abdomen and of the thigh.

The lesions found at the *autopsy* were: 1°. In the *lung* isolated or gathered together, purulent centers, varying in size between that of a hazelnut and a man's fist, resembling at first glance the lesions of the tuberculosis of Koch, with this difference that *there was nowhere any trace of calcification.*

Few of these centers open in the bronchia, which contain thick, yellow pus. The recent lesions are the most interesting: By more attentive examination, it is observed that the purulent centers are formed by *several concentric layers* of concreted pus, alternatively of whitish or yellow color, more or less hard from the center outward. There were 5 or 6 layers in succession surrounding the softer center. The most external is fibrous and sends prolongations in the pulmonary tissue around, generally healthy.

The small centres, the subcutaneous and muscular nodules, have all the same structure. The large centres are caseo-fibrous and collected together, forming irregular masses about as big as a man's fist. The same stratification is present.

2. In the *subcutaneous tissue and superficial muscles.* The nodules do not contain pus, if they are large. They give the impression of an elastic tissue, grey in color, and show on section concentric layers alternately light colored or dark, and surrounding a central spot almost as hard as the other parts of the nodules.

There is no trace of calcification and the nodules have a caseo-fibrous type. The lymphatic cord of the carpal region is clearly caseous and of ochre color.

The presence of the concentric layers of the nodules is important as they have not been described in tuberculides, and it suggests the possibility of another affection besides tuberculosis.

The lymph glands of the organism were healthy except the left bronchic and the mediastinal. This last, as big as the fist, is transformed into a large nodule of pus concreted in concentric

layers. The left bronchic gland has in its centre a purulent nodule the size of a pea. No trace of calcification anywhere. All the other viscerae normal.

*

* *

BACTERIOLOGY AND ANATOMO-PATHOLOGY.—Repeated microscopic examinations failed to detect bacilli retaining the Ziehl in the pulmonary tissue, sub-dermic nodules and the mediastinal lymph gland. Alone the left bronchial has, out of ten preparations, given two forms of acido-resisting, reminding one of the bacillus of Koch. From the point of view of tuberculosis, negative result whether with pulmonary or lymph glands lesions.

The histological study of the subcutaneous and muscular lesions show that the nodules are of inflammatory origin and comprehend four distinct zones. And in most of the lesions the coloration with hemateine-eosine revealed the existence in the centre of the nodules of a *vegetal parasite* characterized by threads and spores. This parasite appears under the form of threads intermixed or not, of various sizes, often undulated and terminated by conical spores. This parasite has been found in almost all the degenerated centres and all the pulmonary lesions. In those of the subcutaneous connective tissue the parasite was also found. The case was evidently a true generalized mycosis.

In conclusion, says the writer: " The aspect of the subcutaneous nodles so different from described tuberculides, that of the pulmonary lesions (purulent centres not calcified), the absence of a positive result to the tuberculosis point of view, the presence of a mycelium and of spores in the degenerated tissues, justify the statement that there exist a vegetal parasite other than that the blastomyces and the sporotrix that can invade the various tissues of the organism of bovines—and it appears from that that practically the dagnosis of sub-dermic lesions becomes complicated and as stated at the beginning one may, when suspecting

and looking for tuberculosis, find himself in the presence of a mycosis in process of generalization."

* * *

SURGERY OF FOREIGN BODIES IN OESOPHAGUS.—The presence of foreign bodies arrested in the oesophagus often gives great trouble to the practitioner who is called to relieve the suffering animals. Many are the suggested manipulations, and almost every veterinarian has one which he believes as good if not superior to any other. The *Berliner Tiesurztliche Wochenschrift* has related the treatment of two German practitioners.

For Johann, all the classical methods having failed in the cases of oesophageal obstruction by foreign bodies, he recommends the following method:

First it is necessary to make out the position of the foreign body and to be sure that there is no lacerations of the oesophagus, which are often present, as a result of the numerous attempts that are made before the veterinarian is called. If a laceration exists, the animal must be slaughtered. When the foreign body is in the cervical portion of the oesophagus (Johann has never seen it in the thoracic portion), attempts are made to have it returned in the mouth or to push it in the stomach, operations which must be carried out with care. If these failed, as often, then the animal has tympanitis, puncture of the rumen is performed. Then the animal is cast on the right side with head held extended by assistants. Temporary tracheotomy is performed and a Gunther speculum introduced in the mouth, which permits the hand and arm for exploring. To assist the prehension of the body, an assistant pushes it upwards through the skin towards the head.

In case the hand cannot grasp the foreign body, a thin metallic wire, having a loop at its end sufficiently solid to not bend when coming in contact with the mischievous substance. Attempts are made from outside to push the foreign body into the

loop of the wire, while an assistant pulls it out. If the wire is smooth and the crossing of the loop is covered with some cords there is no fear of injury to the oesophagus.

After the operation the speculum is taken out, the trachetomy tube removed and the animal allowed to get up. No accident or complication are to be looked for. Only once out of 17 cases has this method failed.

* * *

Mr. Becker, in the same journal, says that stimulated by the observations of Johann he has resorted to a method which has given him the best results.

First of all he tries to bring the foreign body back in the mouth. The cases that he describes were all of bodies in the cervical portion of the oesophagus. Like Johann, he has never seen them in the thoracic region.

For years he has given up the attempts to push the body towards the stomach, and instead of the oesophageal probang he has used a gum probe, with 3 centimeters diameter.

To push back the body into the mouth, he keeps the animal standing up, the head well extended on the neck. The operator places himself on the left side, passes his right arm over and around the neck and with the thumb of each hand in the corresponding jugular groove tries to displace the foreign body. Apples and potatoes can be easily dislodged on account of their form, but the success is not certain because of the resistance of the animal or of the motions of deglutition which have a tendency to push the body towards the stomach.

To avoid the working of the hands, which is very tiresome, Becker had made a forceps analogous to the nippers of horse shoers, or to those used in the exploration of the foot. Each extremity of these nippers has a ball in shape of a pigeon's egg. This instrument takes the part of the hands, and the balls that of the thumbs.

After several years' application of this method, Becker counts

75 per cent. of success by the use of the nippers. When it is not possible to bring the foreign body back Becker leaves it, and after one, two, three and even four days the foreign body is spontaneously displaced. It is sometimes difficult to convince the owner that the foreign body may be left several days in the oesophagus without causing trouble, and that is often the most difficult part of the operation.

* * *

THE VIRUS OF RABIES.—A few months ago the scientific world was initiated into a discovery made by Dr. Hydeyo Noguchi, of the Rockefeller Institute for Medical Research in New York, and which was related in many of the scientific papers of the Continent. In the *Presse Medicale* of September last, I find the article of Prof. Noguchi and make from it the following extract:

"In the beginning of 1912, I undertook the culture of the virus of rabies, and I have obtained some results which I can sum up briefly.

"There were made fifty series of cultures with the brain and spinal cord, removed aseptically, from rabbits, guinea pigs and dogs which had been inoculated with 'street virus' or '*virus de passage*' or 'fixed virus.' Generally the animals being etherized a short time before the spontaneous death.

"The method which gave the result that I am about relating, is similar to that which has been employed successfully for the cultures of the spirochetes of recurrent fever. In these cultures, there develop minuscule granular corpuscles and chromatoid pleomorphic corpuscles a little larger; which, after transplantation, reappear in the new cultures during numerous generations. To all appearance these same corpuscles have been obtained with the street virus, that of passage and the fixed. The smallest of these corpuscles are detected at the very limit of microscopic visibility. On four different occasions, I have observed, in the

cultures of the virus of passage and of fixed virus, round or oval nucleated corpuscles surrounded with membranes which notably differed from the smaller granular corpuscles, also developing in the same cultures as those. Their apparition was sudden and abundant, of a duration of four to five days; when they after underwent a diminution which coincided with the increase of the granular corpuscles. In one of the four cases, these larger corpuscles were produced in a culture prepared with a rabbit brain, previously inoculated with culture of virus of passage, resulting with rabid symptoms. In two other cases, the larger nucleated corpuscles were developed in cultures prepared with fixed virus, in which it was difficult to bring in evidence the Negri's corpuscles either on the sections or on froitis.

"The general morphological characters of the nucleated corpuscles were photographed, magnified 1,100 times. With them were also printed as comparison corpuscles of Negri from dogs' brains, which had died with street virus. The cultivated nucleated corpuscles are about multiplying by division or buddings and have the appearance not of bacteria but of protozoars. The individuals gathered in a mass may in a certain time become enclosed in a common capsule. At the ultra microscope, they show defined characters, observed in colored preparations. The centre has a nucleus, the membrane is distinct and very refrigerent. About the time where the nucleated corpuscles gradually disappear, numerous granular corpuscles of characteristic formation and minute free round corpuscles appear in the cultures whose signification is not to be considered.

"None of the mentioned forms develop in the other different media tried until now, and the cultures assume an appearance of sterility when they are submitted to the ordinary bacteriological tests.

"In inocculating cultures containing the pleomorphic or nucleated granular corpuscles, rabies has been produced in dogs, rabbits and guinea pigs, as proved by typical symptoms and positive inoculations to animals. In the preparations of frottis made

with the brain of these animals, the granular corpuscles exist always and the nucleated corpuscles are several times present in large quantity."

This discovery of Prof. Noguchi throws a brilliant light on the pathogeny of rabies, which will be admired the world over.

*
* *

YOHIMBINE IN VETERINARY MEDICINE.—Taken out of human practice, it seems that this new alkaloid has a certain claim for its usefulness in veterinary practice. Indeed, from some of the Continental journals one can find some evidence of the good results obtained by its use. This is a reason for my calling attention to it.

Specific drug of sexual deficiency, this alkaloid was extracted by Dr. Spiegel, of Berlin, in 1895 from the bark of a tree, the Yohimbehe, which belongs to the botanic family of Rubiáceas. It was an African explorer, Ludwig Scholz, that first brought the bark into Europe, and the alkaloid can be found now in trade under the name of Spiegel Yohimbine, where it is offered as nitrate, sulphate, phosphate, lactate or iohydrate of Yohimbine, but its muriatic salt is the one which is most commonly called for, the others being less stable in their composition.

Like many other alkaloids of vegetable origin, Yohimbine acts on the nervous centers and presents the peculiarity that its elective specific action is strictly localized to the inferior part of the spinal cord and to the centres of erectism that are found there. According to Muller, the centre of erections in dog under the influence of Yohimbine, reacts more promptly to nervous excitations; the touchings of the prepuce, of the internal face of the thigh, etc., promote erections more easily than in ordinary conditions. Yohimbine is then to be considered as the only sexual stimulant, actually known. It has also another property which makes it a true aphrodisiac, it is a vaso-dilator. This action is

most noticed on the genital organs, which in rabbits is principally manifested towards the testicles.

For these many properties Yohimbine has found therapeutic indications which have justified its employment in animals, where the effects have been the subject of important communications and many experiments, scientific and practical, have established the fact that it is a specific against impotency, and that it increases weakened genital power.

Holterbach, a veterinarian from Baden, who was the first to test Yohimbine in animals in 1904, used it in bulls; one especially which had refused to serve cows for nine months, notwithstanding the best food and hygiene; and in 10 days was returned to its duties.

Simon, in *Wochenscrift fur Tierhielkunde und Wichznet*, reports the case of a bull which had become impotent after a bruise of the scrotum and could no longer serve cows; treated with muriate of (Spiegel's) Yohimbine he recovered in five days.

Dr. Enrico Ficarelli obtained similar results in four weeks with a healthy bull which had been unable to serve for two months.

Other similar results were also recorded by Otto Gratz, Gutbrod, Creutz and other who tried it in large male and female animals.

With stallions it has also been employed with surprising results by Creutz of the Cape of Good Hope, by Tetersen, who claimed that after giving Yohimbine (Spigel) for three days he had noticed that the sperm of the stallion, which had been watery, very thin and without spermatozoids previous to the administration of the drug, had a thicker and greyish colored aspect, and showed under the microscope a great quantity of spermatozoids.

A similar case is also recorded by Kogan, a Russian veterinarian.

Reichenbach is the only one who has met with failure.

Yohimbine (Spiegel) for veterinary use is sold as Zosthenic

Tablettes of various doses, which can be given by mouth or in subcutaneous injections.

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TREATMENT OF CAPPED ELBOW.—In the *Berliner Tierarztlich Wochenschrift* there was published lately a few notes on Surgery, by Prof. Magnussen, and among them on the treatment of capped elbow.

In general, this condition is not accompanied with lameness, but its presence changes the appearance of the animal and diminishes its commercial value. It is on that account that the services of a veterinarian are often required.

Maur and Frick recommend, when the capped elbow is not of long standing, to resort to bin-iodine ointment applied every two or three days. If the result is not satisfactory caustics such as arsenic or sublimate may be tried. Injected under different forms in the center of the tumor, they may bring its resorption about. For Magnussen this is a poor treatment. The ligature may be applied on capped elbows which have a fine peduncle, but if the base of insertion is a little too wide, a granulating surface is left which requires a long time to cicatrize.

The best method is undoubtedly the extirpation. Classical processes make the operation difficult, leaving a cavity with wide dimensions after the ablation of the tumour, besides exposing to severe hemorrhages which are difficult to stop and cicatrization by first intention cannot be looked for. Prof. Morkeberg, of Copenhagen, has modified the classical method and it is the one that Prof. Magnussen describes now.

"Chloral being administered by rectum or *per os*, as the anesthesia is about taking place, the horse is cast on the side opposite the one he is to be operated upon and the leg is left in the hobble. A rope, fixed round the coronet, is pulled forward to disengage the field of operation. The region is shaved and disinfected. In the direction of the length of the tumour double silk

threads are passed, 3 or 4 centimeters apart, from upwards downwards generally, as far as the base of the tumour. Parallel to the great diameter of the growth a rubber tube is applied and secured as in the Bayer's suture. The skin is incised round the tumour in such a way as to permit an easy coaptation of the edges of the wound. The tumour can then be removed without fear of hemorrhage. If an arteriole is divided, forcipressure forceps closes it. During the extirpation of the tumor, some threads of the Bayer's suture may be cut, they can be replaced after the operation. To be sure that there remains no fibrous tissue, interrupted suture is made. Prof. Morkeberg places a drain, Magnussen does not. The region is covered with iodoformed gauze and the animal allowed to rise. He is placed in slings until complete recovery. Care must be taken that the animal does not tear the dressing with his teeth or rub it off with the hind legs. The deep suture may be removed after 10 or 12 days, cicaterization is said to be completed in fifteen days, leaving only a hairless linear cicatrix and a few spots without hairs, which are easily concealed by those of the surrounding parts." How pretty all these look on paper!

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GEEL-DIKKOP.—Under this name Mr. Dixon, veterinarian, has described a disease of small ruminants which is reprinted in the *South African Agricultural Journal.*

It takes its name from the swelling of the head and yellow serous effusion underneath the skin of the head and is a disease affecting sheep and goats, being prevalent principally during the summer months.

Sheep and especially lambs are more susceptible to it than goats and merinos more than Cape sheep. The disease is attributed to several causes, by some to the eating of small creeping plant called the " dubbeltje-doorn," by others to a small grub which is embedded in the stalk of the dubbeltje-doorn, by others

to the water drunk under certain conditions, during the heat of the day.

The symptoms are described as follows: The first noticed is a hanging of the ear or a shaking of the head, and if the animal is caught the ears will be found hot and swollen. The swelling will extend to the face and between the lower jaws. The temperature is not usually very high for sheep, ranging between 103 degrees and 105 degrees Fahrenheit.

The serous effusion beneath the skin of the head is at first clear, afterwards becoming of a yellow golden color as soon as symptoms of jaundice show themselves, and are apparent first in the eye. Within a few days the animal becomes weak and depressed, lying down for a long time.

The feces are hard and coated with yellowish mucus and sometimes tinged with blood. The skin over the tumefied portions of the head (eyes, lips and eye lids) becomes hard and dry, cracks and peels off, leaving ugly sores. The average duration of the disease is about four to seven days. Sometimes however cases will last longer. In those cases the affected animals will become emaciated and die with bilious poisoning.

Post Mortem Appearance.—Jaundiced condition of the whole body and yellow serous effusion in the connective tissue of the skin of the head and ears.

The liver is congested, sometimes of a deep yellow color with the bile ducts filled and the gall bladder is distended with bile, which is generally thick and acid.

The kidneys are enlarged, but do not appear to show any structural alteration, nor does the spleen.

In the digestive track is observed a catarrhal gastritis of the abomasum and inflammatory redness with hemorrhage in the small intestines and catarrhal lesions of the entire intestinal canal.

The urine contains bile, and the jaundiced condition of the body is due to the catarrhal lesions of the bile ducts obstructed.

The treatment recommended seems very simple—while it is possible to treat with success affected animals early in the disease

when the majority of cases will recover with a dose of calomel, 5 to 10 grains, according to size and age, oftener when the disease is far advanced the treatment is of little avail and calomel better be left aside. Early treatment is the principal indication. However, in cases where the swelling of the head does not seem to subside, chloride of ammonia 40 to 60 grains daily are indicated.

It is also very essential to separate the sick from the flock at once, placing them in covered sheds to protect them from the sun and allow them to remain quiet.

* * *

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NOW IS THE TIME.

Opportunity is the handmaiden of success in the securement of legislation. Military legislation is easiest obtained in the United States at a time when war is seen to be, if not immediately, at any rate remotely, possible, as a result of international complications between our own country and another. Such a dangerous situation exists in Mexico to-day, and it is sure to have its effect this winter in bringing to the foreground in Congress the necessity for military preparedness. War Department legis-

lation is going to be easier in this session of Congress, apparently, than in any since the Spanish War. The other day a bill, now before the Senate, passed the House, authorizing the President, in case of public necessity, to raise a volunteer army; for it is known from our experience in the last Mexican war that 65,000 men will be needed to capture Mexico City and that 100,000 more men will be wanted to disarm guerilla bands, entirely pacify the country and restore order and the reign of law. Though economy is the political cry of the hour, the new army appropriation bill for the fiscal year 1914-1915, now before Congress, carries new items, amongst them a special appropriation for field artillery munitions, which will bring it up to $106,000,000, a decided increase over the last three years and an increase of fully $11,000,000 over the appropriation for the fiscal year 1913-1914. We are not going to intervene in Mexico except in extremity; but we are going to make every preparation for intervention should that extremity arise. Consequently there will be less balking at military legislation in the 63d Congress than in the 62d Congress, and all military measures will feel the lilt of the vexatious war situation and will move easier in their course.

Now is the time, therefore, for us to push our measure, the army veterinary service bill, H. R. 4541. The Mexican situation will help our bill through Congress along with other military bills suitable for present and future army improvement. It was during the Spanish war contingency that Dr. Huidekoper very nearly won his struggle for the formation of an army veterinary corps. It is now, in face of the Mexican difficulties, that Dr. Hoskins will find doors opening before him. We should take occasion by the hand. Events are propitious for the army veterinary service bill. The opportunity should be seized while it is nigh.

The War Department is looking much more favorably upon our claims, that the army veterinarian should be a commissioned officer, as provided for in our bill. In the Committee on Military Affairs of the House, Mr. Hay, the Chairman, will take care of the interests of the bill because it is his own bill, as he introduced it personally. On the floor of the House the bill will be defended

by such men as Congressman A. Mitchell Palmer, of Pennsylvania, who was President Wilson's floor leader in the Baltimore Democratic Convention, and whose own brother is a graduate veterinarian practising at Easton in the Keystone State. We should have very little difficulty in getting the bill through the House.

In the Senate there is a mountain of work before us to pass the bill. Means will have to be found to reach every Senator; but by searching for influences and concentrating them upon each Senator we ought to be able to press a passage. Some one man or some few men in each State will have to be found who will make it their business to round up influences and win over the Senators. They are fewer in number, but on the whole not so easy to reach as Representatives. There is however always a way to reach the throne; there is always a way to reach the top men as well as those in lower estate. The thing to do is to find the way. In view of the ugly situation of affairs in Mexico, Senators will be more considerate of all military legislation and more approachable by us. Since our struggle is to be in the Senate, every loyal veterinarian should hold himself in readiness to lend a hand. The Senators are made to take an interest in most miscellaneous ways. It is your duty to reach your Senator yourself or have some one reach him for you in the interest of the bill.

G. S.

A TRIBUTE TO THE MEMORY OF JAMES L. ROBERTSON FROM A FORMER STUDENT.

James L. Robertson—student, scholar, practitioner, teacher, association worker and supporter, and sincere friend.

Full of years, more than two score of which he filled the rôle of teacher, counselor and instructor, he has passed from our midst and into the great beyond—full of honors, the personal regards of all who knew him and loved by all who basked in his personal friendship.

A pioneer in the field of teaching veterinary medicine as a science; by example as an ideal and ethical practitioner he gave to veterinary medicine riches of incalculable worth in leading others to a more ethical regard for our calling. As a counselor he was of few words, but they were words of wisdom, the fruits of an observing experience and in the highest sense a full appreciation of the true relations of practitioner and client.

Of the kindliest of nature he won the loving regard and utmost respect of every student whose privilege it was to listen to the words of wisdom that fell from his lips. A profound student himself and a great reader and delver into the products of the world's best students and writers, he carefully weighed every fact he presented and the value of every such claim was weighed and tested in a wide and varied experience as a practitioner and the truths only presented as they were milled in his own strong mind and keen observation.

As an association worker and supporter he filled every rôle of service in our national body—secretary, treasurer, president, committee worker and contributor of his own observation and study, and liberal supporter of every movement that tended to its growth and advancement. By his unvarying attendance at its meetings, his constancy in attending its sessions, and his participation in its deliberations, his life work in this field was beautiful and complete. Even when impaired health and sapped energies were undermining his physical forces, he made the journey to California as a testimonial of his devotion to association service.

To have known intimately so many sides of this good man's life was one of the precious privileges that I have enjoyed and to his memory let me add my testimonial of loving admiration for the splendid traits of character that marked his life as a friend, teacher, counselor, practitioner and association worker.

His work is finished, he filled well every duty, and his memory will linger longest with those who knew him best.

W. Horace Hoskins.

WILLIAM HUNTING, F.R.C.V.S.

In the *Veterinary News* (London) of November 1st, we read of the death, on October 24, 1913, of William Hunting, Past President of the Royal College of Veterinary Surgeons, Consulting Veterinary Inspector to the London County Council and Editor and Proprietor of the *Veterinary Record*. Professor Hunting was in his 67th year. He was the eldest son of the late Charles Hunting, M.R.C.V.S., of South Hetton, Durham. Graduated from the Royal College of Veterinary Surgeons in 1865, he became Professor of Veterinary Science at the Royal Agricultural College, Cirencester, and subsequently at the Albert Veterinary College, established by Prof. Gangee in London. For a number of years he enjoyed a large and lucrative private practice in London; but Prof. Hunting's ambitions were directed more toward the advancement of his profession than the amassing of a fortune. There has been scarcely any position of trust or honor in the gift of the profession, to which he had not added lustre and dignity at one time or another. Space will not permit of the enumeration of the many societies in which he has held office; or of the many contributions that have been his toward the upbuild of veterinary science; and not alone England, but the world sustains a heavy loss through his demise.

RICHARD GLOVER, F.R.C.V.S.—This well-known English veterinarian died recently of Bright's disease, in his 69th year. Mr. Glover carried on a successful practice at West Ham, where he was also inspector of contagious diseases of animals, by appointment of the Town Council, and lecturer and examiner of the Royal Sanitary Society in connection with inspection of meat at the chief markets in London. He was an active Mason and a member of the Ancient Order of Foresters.

SOUTHERN CATTLEMEN'S ASSOCIATION.—The 1914 meeting of the above association will be held in Meridian, Mississippi.

ORIGINAL ARTICLES.

THE DIAGNOSIS OF GLANDERS.*

By John R. Mohler and Adolph Eichhorn, Washington, D. C.

It is no longer doubted that in the work of controlling glanders the destruction of the infected animals should be given prompt consideration, and if possible the infection should be traced to its origin. Unfortunately, the nature of the disease is such that only a comparatively small proportion of the cases can be recognized by the ordinary clinical examination, and as long as we limit our efforts to the destruction of these cases, the disease will continue to spread. An effective control can be accomplished only by the elimination of all centres of infection of glanders. Therefore it is essential primarily to have means of diagnosing accurately all forms of the disease.

Numerous publications have been issued on the various methods of diagnosis and it seems that while some favor a certain method or methods, others appear to produce sufficient evidence to point out the inadequacy of these methods. There is no question but that in the last decade important progress has been made in the diagnosis of this disease. In fact, since the discovery of mallein competent investigators have fruitfully studied this phase of the question of the control of glanders, and at the present time we possess several methods by which we are reasonably sure of diagnosing practically all cases of glanders. A minimum percentage of failures will probably always have to be contended with, as a good many factors enter into the execution of any test.

In judging a method which would be the most satisfactory

* Presented at the 17th annual meeting of the U. S. Live Stock Sanitary Association, Chicago, December, 1913.

for the diagnosis of glanders various things have to be taken into consideration, but especially the reliability of the test. It should be convenient, the results should be manifested as early as possible, the reaction should be distinct and well-marked, and probably the most important of all it should be possible for the practicing veterinarian to apply the test. The last condition must be seriously considered since the standing of the veterinarian in the community and the confidence of the public in his work would be more manifest if in suspected cases he could personally decide on the diagnosis instead of having to depend entirely on the results of serum tests made at some distant laboratory.

It would require a great amount of space to enter into the history of the various methods of diagnosis and to enumerate the data we possess on the different tests. The advantages and disadvantages of the various methods, especially of the subcutaneous mallein tests, have been repeatedly published and are accessible to all those who are interested in the subject. There is no question but that the subcutaneous mallein test is one of the valuable diagnostic agents for glanders, but no one can any longer deny that failures from this test are more numerous than are desirable. As a matter of fact, the uncertainty of the results from this test caused numerous investigators to seek some other methods which might replace the subcutaneous mallein test. Besides the failures resulting in this test, the technique of execution of the test together with the time required for the conclusion of the test makes it unpopular for many veterinarians and sanitary officers.

Of the other tests which have been devised for the diagnosis of glanders from time to time the precipitation, the opsonic, and the conglutination tests will not be considered since the results from these tests are not encouraging.

For laboratory tests the combined agglutination and complement fixation test will no doubt remain the most satisfactory and can always be safely applied in cases where doubt arises as to the results of other tests carried out by the practising veterinarian. Thus these tests should be considered as accessory tests and provision should be made everywhere so that in case of doubt

the serum could be subjected to these tests, and the final decision should rest on their outcome.

During the past few years the ophthalmic mallein test has gained great favor in the diagnosis of glanders. The popularity of the test is rapidly gaining wherever this method has been applied, and among its supporters we find at the present time the greatest authorities on the subject of glanders and on clinical diagnosis. This method of testing is at present officially recognized in Austria, and the indications are that ere long it will constitute the official test in other countries. The results obtained in Austria, where the test has been employed for several years, are very gratifying, and Schnurer, one of our greatest authorities on glanders, claims that the control of the disease can be very satisfactorily carried out by the application of the eye test, supplemented in doubtful cases by the agglutination test. Bavaria has recently adopted this method of diagnosis for official testing. In Germany this method of diagnosis is also gaining in favor and current veterinary literature contains expressions of satisfaction of this test from many German authorities. The Bureau of Animal Industry, in consideration of the favorable results obtained from this test, has decided to recognize this method of diagnosis for interstate shipments of equines, and the forthcoming issue of Service Announcements will contain this information. Horses offered for shipment to Canada must continue to be tested by the subcutaneous method, as the ophthalmic test has not yet been officially recognized by the Canadian authorities.

This method has a great advantage over others by its very simple application. It may be readily executed by any veterinarian, and its other advantages are that the results are obtained in a comparatively short time and are as a rule distinct and definite. The simplicity of its application is plainly manifest when compared to the subcutaneous test as it is only necessary to drop into one of the eyes of the animal to be tested 3 to 5 drops of concentrated mallein, or by a still simpler procedure to dip a camel's hair brush into mallein and introduce this into the conjunctival sac of the animal. The reaction usually commences in 5 to 6 hours after the introduction of the mallein and lasts from

24 to 36 hours. A positive reaction is manifested by a purulent secretion from the tested eye. This may be very profuse or slight, sometimes associated with a severe conjunctivitis and

The discharge from eye and swelling of lids are the features in these photos.

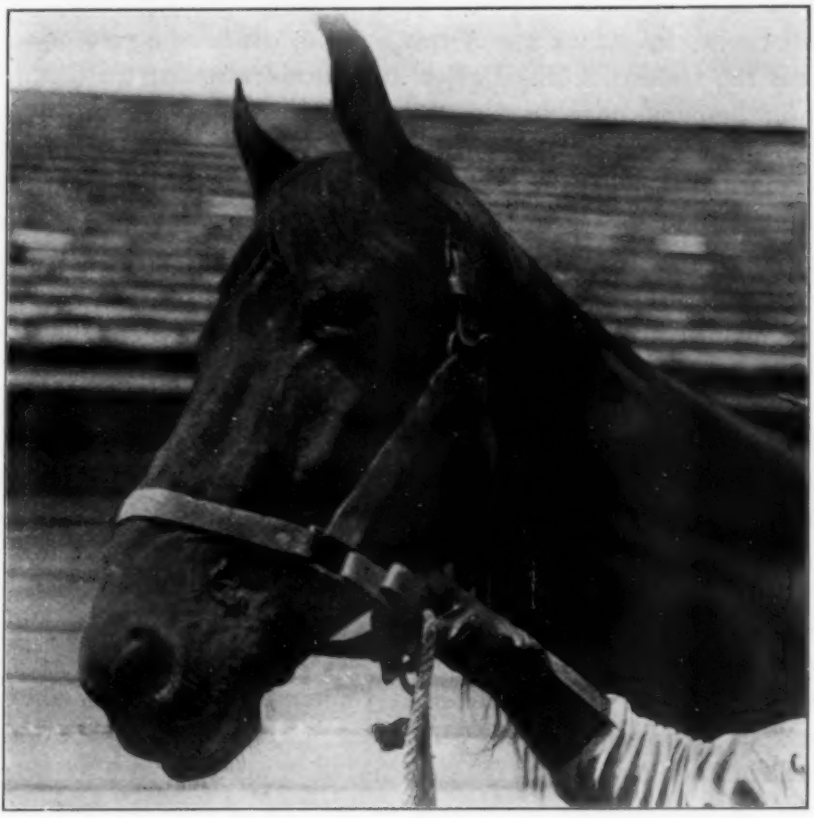
1.—Strong purulent discharge with swelling and gluing together of both lids. P + + + +

edema of the lids, and at other times without any inflammatory symptoms being present. At times only a very small quantity of pus may be present in the inner canthus of the eye. At other times the reaction may manifest a true pyorrhea.

The reaction manifests itself in varying degrees in the animals, but the intensity of the reaction has no relation to the extent of the disease in the reactor.

The available data on the ophthalmic mallein test is sufficient to draw conclusions as to the reliability of the method, and in Austria alone it has been applied on many thousands of cases with uniformly good results.

In considering the good results obtained and the advantages of this method of testing a concentrated mallein has been prepared for this purpose by the Bureau of Animal Industry, and this was made available to a number of practicing veterinarians who desired to give this method of testing a thorough trial. It has been also employed by inspectors of the Bureau of Animal Industry in their field work, and reports are accessible regarding its action for diagnostic purposes on more than 8,000 cases. The results from all sources were uniformly satisfactory. Practicing



11.—Strong purulent discharge with swelling of both lids. P + + + +

veterinarians who have given this method a trial have reported very favorably on the tests made and those conducted by the Bureau Inspectors on several thousand animals were also satis-

factory. At all opportunities this method has been applied in Washington, and recently in some immunizing tests of glanders conducted by the Bureau of Animal Industry there was a good opportunity to repeatedly employ this test. In all these instances the results were uniformly good. In cases of glanders there appeared a marked purulent conjunctivitis and the reaction at times was so severe that the animal could not open its tested eye.

The essential factor in obtaining satisfactory results from the tests appears to be in the use of the right kind of mallein. It must be by all means a concentrated mallein and apparently the best results follow the use of raw mallein, which as a rule represents the mallein obtained after the concentration of the filtrate from the bouillon cultures of the glanders bacilli. The ordinary mallein used for subcutaneous testing is not adaptable, and the few failures which have been reported in the literature were without doubt in the majority of cases due to the fact that the mallein employed was not sufficiently concentrated. Marioth correctly asserts that the reaction does not depend as much on the quality and quantity of the mallein as on its concentration. Our experiments in preserving such mallein with the ordinary quantity of 0.5 per cent. carbolic acid showed that it does not interfere with the results of the test, although the lacrimation which follows immediately after the introduction of the mallein is more profuse than when carbolic acid has not been added, but this disappears within 1 or 2 hours after the application of the test. The concentrated mallein which has been prepared by the Bureau for this work and which gave such satisfactory results was carbolized, but contained no glycerin as a preservative. Only the glycerin which is added to the culture media is contained in this ophthalmic mallein. The precipitation which takes place in the concentrated mallein is eliminated by repeated filtration and the product even after several months of keeping showed no indication of a precipitate or cloudiness. It represents a brownish heavy fluid.

It is advisable to provide the mallein for the tests in small vials, each containing about 1.5 c.c. of mallein, which is sufficient for testing 15 horses. After the vial has been opened and

part of the contents used for testing, especially if the mallein has been taken out with a camel's hair brush, it should not be used for tests applied on subsequent days, but should be discarded.

Another form of mallein which has been used quite extensively for the eye test is the mallein siccum or dry mallein. This represents an alcoholic precipitate of mallein. It is a fine grey powder and must be dissolved in water before it is used. The solution loses its effectiveness in a very short time and must be prepared fresh on the day of the test. Dr. K. F. Meyer, formerly of the University of Pennsylvania, and now of the University of California, used the dry mallein extensively, and at the present time this preparation is employed in Pennsylvania for the application of the ophthalmic test. For this purpose 2 vials are sent out from the laboratories of the Pennsylvania Livestock Sanitary Board, one containing the powdered mallein, and the other sterile or saline water in quantities which will make a 5 per cent. solution of mallein. The contents of the bottle containing the solution is poured into the bottle containing the mallein, and the test fluid is thus prepared. The results with this form of testing in Pennsylvania appear to be highly satisfactory, as may be seen from a publication by Dr. Meyer on the Conjunctival Reaction for Glanders in the March, 1913, number of the *Journal of Infectious Diseases*.

The advantages of the use of one or the other of these forms of mallein for the eye test are not marked, as equally good results were obtained from the application of both forms of this product. The fact that the preparation of the raw mallein is less laborious and expensive than the mallein siccum and that it is ready for use on opening the vial would probably give this product a greater popularity. It is only natural that should subsequent extensive testings show the superiority of the dry mallein it will be given preference over the raw product.

The favorable results which have been attained with this diagnostic method can no longer be denied. Its practicability is apparent and its use in the control of glanders appears to be advisable.

Glandered animals are hypersensitive to mallein in a way that

the administration of small quantities of mallein produce local inflammatory processes. In larger quantities it produces a febrile general affection. The hypersensitiveness appears as a rule during the third week after the infection and reaches its height in the first few months after the infection. In the subsequent course it subsides in retrogressive cases even to the unsensitiveness of healthy animals, but even in these cases various conditions may bring on an increased sensibility.

Before the application of the test the animals should be carefully examined to ascertain whether the eye shows conjunctivitis or other changes which are associated with suppuration. Should such be present the test should not be applied.

The test consists in introducing into the conjunctival sac of the eye several drops of either undiluted raw mallein or a solution of precipitated mallein (0.1 to 0.2 c.c. per horse). This may be introduced either with the aid of a camel's hair brush or with an eye-dropper. The other eye is not treated but serves as a control for comparison of the reaction. For the testing of horses in the same stable the same dropper or camel's hair brush may be used for all animals.

As soon as the mallein is introduced into the eye practically all animals show a lacrimation, increased reddening of the conjunctiva and slight photophobia. No significance should be given to these symptoms. They disappear in one to two hours.

The characteristic manifestations of the reaction for glanders commences as a rule from 5 to 6 hours and lasts 24 to 36 hours, sometimes longer. It consists of a purulent discharge from the conjunctival sac which is typical, as well as swelling and gluing of the eyelids. It is advisable to examine the tested animals from 12 to 24 hours after the application of the test in a good light.

A suppurative discharge of varying quantities is considered a positive reaction. The conjunctiva and the eyeball should also be included in the examination after examining the discharge. A pseudo-reaction can be produced by artificial or accidental irritation of the eye. By removing the purulent discharge (either by the stable attendant or by the animals licking each other, etc.),

the positive result may be obliterated. In such cases dried pus may be frequently found on the parts around the eye.

Generally the positive ophthalmic reactions are not accompanied by fever or systemic disturbances. Occasionally, however, affected horses are hypersensitive to such a degree that even the few drops of mallein placed in the eye may enter the circulation and produce fever. Therefore it is advisable to accompany the ophthalmic reaction with temperature readings. For this purpose the temperature should be taken twice, the first time when the eye test is being made, and the second time when it is judged. In a doubtful eye reaction where there is an increased temperature of 1½ degrees Fahrenheit, the test should be considered positive if the animal had a normal temperature at the time the test was made.

In the absence of any secretion the test should be considered negative. When there is a mucous secretion or lacrimation during the period of reaction the test must be considered as atypical, and in such cases it may be repeated the same day when as a rule the results are more confirming.

The application of the ophthalmic test should not be repeated very often on the same animal, as experiments show that the reaction after the third application usually loses its intensity in positive cases and on subsequent tests may be entirely absent. In cases where the results of the second test immediately following the first test are atypical, the blood of such animals may be drawn and forwarded to a laboratory for the serum diagnosis. From experience gained with the eye test such a procedure would become necessary only in a comparatively few cases.

The Special Committee on the Control of Glanders of the American Veterinary Medical Association gave a most excellent report on the various phases of diagnosis of glanders, and the conclusions on the value of the eye test offered by the committee are in perfect accord with our findings, and therefore we deem it advisable to include them in this paper as follows:

1. The ophthalmic test not only meets all the requirements, but is without doubt the most convenient diagnostic method at our command.

2. Its reliability compares favorably with any of the other tests available.

3. The reaction is usually very distinct, and doubtful or typical reactions are rather infrequent.

4. The ophthalmic test has the advantage that it does not interfere with subsequent serum or other mallein tests if such are deemed necessary.

5. The test may be repeated within 24 hours on same or control eye. If another retest is necessary, it should not be made in less than three weeks.

6. The ophthalmic test should be recognized by State and Federal authorities, since its reliability can no longer be doubted.

7. In all atypical and doubtful cases of the ophthalmic test the combined complement-fixation and agglutination or subcutaneous mallein test should be utilized for confirmation. Such a procedure would minimize the failure and would assure the best results in the control of the disease in a single stable or in an entire community.

Appendix.

The results achieved in Austria with the ophthalmic test have been remarkably successful, and deserve the most earnest consideration. The report of Prof. Schnürer on "The Results of the Diagnostic Procedure in Glanders in Austria," is a convincing proof as to the value of the eye test in the control of glanders. The senior writer received a communication only a few days ago from Prof. Schnürer, and since it deals principally with the diagnostic value of the eye test a quotation from the letter will no doubt be permissible.

"I am at the present contemplating collecting the results of the eradication of glanders in Austria during the last three years (1910-1912). During this time 60,894 tests were undertaken on 47,973 horses. Of 272 cases which were found on post mortem to be affected with glanders, 240 (88.2 per cent.) were positive, 21 (7.7 per cent.) gave an atypical reaction, while 11 (4 per cent.) were negative. Of the 47,701 healthy horses, 189 (0.39 per cent.) were positive or atypical, the remaining 47,512 (99.61 per cent.) gave a negative reaction.

"According to these results, therefore, the eradication of glanders is only a question of organization, that is, the mallein-ization of horses at the border and conscientious following up of all suspected horses. Such procedure would without doubt result in a complete eradication of glanders. At the Veterinary School of Austria we have now difficulty in showing the student cases of glanders, and for demonstration purposes we are compelled to artificially infect horses, whereas several years ago we had every week at least one case of glanders in our clinics.

"I use as mallein at the present time a product which I myself prepare which represents a bouillon filtrate from seven different strains of glanders bacilli which has been concentrated to 1/10 of the original volume."

The optimistic view of Prof. Schnürer is certainly justified from the results he achieved and clearly shows that with proper organization in the control work of glanders the eradication of the disease is only a question of time.

The eradication of outbreaks of glanders cannot of course be altogether attributed to the eye test, since from the report of Nevermann, Veterinary Councilor of Prussia, glanders has diminished remarkably in that country, although they employ the combined complement-fixation and agglutination test for the diagnosis, while McGilvray has practically eradicated glanders from the Province of Manitoba by means of the subcutaneous mallein test. The method of testing by means of complement-fixation and agglutination is undoubtedly the most accurate of any available, but since it cannot be as conveniently applied as the eye test, its disadvantages are apparent. There is no doubt that with the application of either the eye test or the combined complement-fixation and agglutination tests, good results may be obtained, provided that the work is conscientiously carried out and that all the reactors are destroyed without hesitation.

As long as the authorities will limit themselves to the destruction of clinical cases only and will not take immediate action on reactors of the occult and latent character, glanders will not only continue to exist, but it will spread.

AN ANALYSIS OF DR. McLAUGHLIN'S PAPER ON "THE TISSUE MEDIUM".*

By Thomas B. Kenny, M.B., Ch.M., M.D., New York City.

I appreciate the kind invitation extended to me by Dr. Ellis to take part in the discussion on Dr. McLaughlin's interesting paper on "The Tissue Medium." I feel rather diffident in offering criticisms because these are not always welcome and sometimes may give umbrage, but Dr. Ellis has assured me that Dr. McLaughlin is seeking light and welcomes criticism of his theory. This is the true mental balance which every real investigator assumes, because it is the criticism launched at each of us which spurs us on to better work and greater triumphs. All of us are seeking light, and it speaks well for an investigator when he invites criticism.

The initial difficulty which presents itself on reading Dr. McLaughlin's paper is the term "tissue medium," and we are not quite certain as to what it expresses. We all know that every cell in the body is bathed in a fluid or pabulum, which is lymph. We would like to be certain that the term "tissue medium" is synonymous with lymph, because we cannot over-estimate the importance of this fluid as it has to do with the life and functions of the cell, involves questions of absorption, conversion of food into energy, the supply of nutriment to the cell, and it is the medium which enables the cell to get rid of the waste products which result from metabolism. The lymph, therefore, bears an important relation to the welfare of the organism and therefore to health and disease. The physician is brought face to face daily

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Note—Dr. McLaughlin's paper referred to, appears in the December, 1913, issue of the Review, beginning on page 319.

with biological, chemical and physiological problems in dealing with the relation of the cell to the intercellular fluid and the treatment of disease. If the lymph be impaired the function of the cell will be impaired, and if prolonged will lead to pathological change. The lymph also bears a very important relation to specialized tissues as found in glands such as the salivary glands, the testes, the thyroid and the various ductless glands so necessary for the welfare and protection of the body, because the lymph spaces are the chief reservoirs for fluid from which the cells during the act of secretion derive the fluid necessary for the process. One realizes still more the importance of the lymph if he remember that with the exception of the splenic corpuscles and a few perivascular lymph spaces of the central nervous system the cells of the body are not in direct contact with the blood. Such structures as the cornea, cartilage, skin, bone and ligaments, and such organs as the heart, liver, kidney, obtain their food supply necessary to life from this intracellular fluid or lymph. If this be the substance referred to by Dr. McLaughlin as "the tissue medium" you will realize the importance of the questions he propounds.

The author, we note as we read, criticises the arrangement of the liver and the pancreas, and tells us that: "Here mechanical principles, if not cast aside entirely, are not treated with due attention, especially as regards conservation of space, for these organs, instead of being in close touch with the intestines as are the salivary glands with the buccal cavity, and the gastric cells with the stomach, are situated in the abdominal cavity."

It really is difficult to follow Dr. McLaughlin. Surely he cannot mean that the stomach and pancreas should be somewhere else instead of the abdominal cavity, to be in close relation to the intestines. Could they be placed in any other cavity of the body and be in closer relation to the intestines than in the abdominal cavity? If we examine the liver in its form and relations to adjacent parts we must admire the perfect workmanship which has constructed so marvelous an organ for the tremendous activities carried on in so small a compass. The arrangement of its lobes

is to conserve space. Anatomically we see how perfectly the convex upper surface fits into the concavity of the diaphragm and the base of the right lung. Can any better attempt at conservation of space be presented than the manner in which those important vessels, the portal vein, the hepatic artery, the bile ducts, etc., are housed between the lobus spigelii and the lobus quadratus? Can the liver be in closer touch with the intestines than it is? We find on examination that the length of the hepatic duct is but 1½ to 2 inches, the cystic duct but 1½, and the common bile duct but 3 inches long. Compared with the ducts of the salivary glands which Dr. McLaughlin claims to be in closer relation to the buccal cavity than the liver and pancreas are to the intestines, we find that Stenson's duct from the parotid is 2½ inches long, Wharton's duct from the submaxillary 2 inches long and the sublingual ducts are many and varied in length. A glance at the pancreas as it lies in the abdominal cavity illustrates even more perfectly that wonderful conservation of space which we find in every part of the organism, animal and human. The head of the organ is snugly fitted into the curve of the duodenum to save space and the body and tail extend towards the left from the curve of the duodeum to the spleen, lying partly over the left kidney. It is flattened out so that it might fit snugly behind the transverse colon, a portion of the head being insinuated behind a part of the duodenum, and in front of the aorta, the inferior vena cava and the renal vessels. Surely no greater conservation of space and the utilization of every little bend and hollow could be devised. So close is the relation between the pancreas and the intestines that the pancreatic duct passes directly through the wall of the duodenum, and to further show the spirit of conservation this duct and the common bile duct enter the duodenum by a common opening as a rule. The mighty cosmic intelligence could not show greater regard than it has done in evolving through the ages organs more perfectly fitted for the purpose or a greater respect for conservations of space than we find in the relations which exist between the liver pancreas and the intestines?

The next objection Dr. McLaughlin raises is that there is

but one secretion in the buccal cavity, one in the stomach, but there are three in the intestines, and he asks why this difference and tells us that physiology gives no satisfactory answer, and furthermore we are as yet "not a unit in the functions of the bile and pancreatic fluid." We cannot agree with Dr. McLaughlin because physiology gives us a very satisfactory reply, just as it does in reference to the functions of the salivary secretions and the gastric secretions. What do the three secretions referred to by Dr. McLaughlin consist of? Physiology teaches us that they consist of definite known substances. We have:

(a) The pancreatic juice, consisting of four enzymes or hydrolytic ferments. These are (1) *amylopsin*, which has a more powerful diastatic action than the ptyalin of the saliva because it acts on raw as well as boiled starch, converting it into maltose. It further alters glycogen into dextrin and grape sugar, and even cellulose is said to be dissolved and gum changed into sugar by it. In the intestines nearly all the starch is converted into maltose, and very little dextrin is left at the end of a prolonged digestion. (2) *Trypsin*, the tryptic or proteolytic ferment which acts upon proteids at the temperature of the body when the reaction is alkaline, and changes them into a globulin like substance then into peptone or albumin, and lastly into true peptone. (3) *Steapsin*, a fat-splitting ferment which causes neutral fats to take up a molecule of water and split into glycerine and their corresponding fatty acids. The liberated fatty acids are partly saponified by the alkali of the pancreatic juice as well as the intestinal juices, and it so acts upon fats as to produce a fine permanent emulsion. Both the soaps and emulsion can be absorbed. (4) The pancreatic juice contains a mild curdling ferment.

(b) *The Bile.*—What are the functions of the bile? (1) It plays a part in the absorption of fats by emulsionizing neutral facts so that the fatty granules pass more readily through or between the cylindrical epithelium of the small intestines into the lacteals. Fat flows more easily through capillary tubes moistened with bile, and filtrates under less pressure through a membrane

likewise moistened with bile. (2) It contains a diastatic ferment which transforms starch into sugar and glycogen into sugar. The action is feeble. (3) It excites contractions of the muscular coats of the intestines and contributes thereby to absorption. (4) It moistens the wall of the intestines and gives to the faeces the normal amount of water, so that they may be readily evacuated. Bile is a natural purgative. (5) The bile diminishes putrefactive decomposition of the intestinal content, especially with a fatty diet. (6) The presence of bile seems necessary to the vital activity of the intestinal epithelium in its supposed function of being concerned in the absorption of fatty particles.

(c) The succus entericus or intestinal digestive fluid is secreted by the numerous glands of the intestinal mucous membrane, Brunner's and Lieberkuhn's glands. Brunner's glands in the duodenum secrete a fluid consisting of mucin and a ferment. This ferment causes a solution of proteids and has a diastatic action which converts maltose into glucose. Lieberkuhn's glands from the duodenum downwards are the chief source of the intestinal juice. This juice possesses a less diastatic action than the saliva and the pancreatic juice in the small intestines, but not in the large; it does not, however, form maltose, but converts maltose into grape sugar, and one of its functions is to continue the action of the saliva and pancreatic juice which usually only forms maltose. It peptonizes fibrin, less easily albumin and partly emulsionizes fat, and it converts cane sugar into invert sugar.

These facts from the physiology of the three intestinal secretions surely prove that they meet fully and in every way the biological, chemical and physiological requirements following the intake of food into the intestinal tract. We can but admire the admirable manner in which nature has supplied a suitable substance to deal with every variety and kind of food substance which passes into the intestinal tract, and we assert emphatically that physiology gives a most satisfactory answer why there are three secretions in the intestines.

Upon what grounds does Dr. McLaughlin base his conten-

tions that the lymphatics continue the processes begun in the alimentary apparatus as the chyme passes into those vessels? He tells us that it is the lymphatics which change chyme into chyle, and leads us to believe that he endows the lymphatics entirely, with the powers and the process of absorption. Is it not rather the special cells of the intestinal villi which convert chyme into chyle as it passes to the lacteals? All the constituents of the food, with the exception of the fat which is changed into fine emulsion, are brought into a state of solution by the digestive processes and passes through the walls of the intestinal tract either into the blood vessels of the mucous membrane or into the beginning of the lymphactis (the lacteals) by endosmosis, diffusion and filtration. Water and soluble salts are easily absorbed and pass readily into the blood as well as into the lymph vessels. Water passes chiefly into the blood capillaries and only a small amount passes into the lacteals. As a general rule soluble substances pass into the blood vessels. Hence we fail therefore to understand why thirst is said by the author to be peculiar to the lymphatic system. What then do we find in the lacteals which, as you know, are the lymphatic vessels in direct connection with the intestinal tract. These lacteals only differ from other portions of the lymphatic system in having a high absorptive activity. The lacteals contain chyle, which is white in color because it principally consists of fats in the form of a fine emulsion. Therefore we cannot see upon what coundation Dr. McLaughlin bases his contention that the lymphatics have a special function which changes the toxic character of chyme when absorbed because food substances are absorbed directly into the blood-vessels as well as into the lacteals, nor do we apprehend his contention that the lymphatic vessels continue and complete the task commenced by the alimentary system. We will not cavil at his statement that the lymphatics can absorb injurious and harmless substances alike and that the lymph glands have the power to arrest or change any foreign bodies, but in this connection we believe the function of the blood stream itself and its power to produce antitoxin is much more effective in rendering any toxic materials

harmless. This wonderful antitoxin power of the blood is not sufficiently realized.

Next, we find a statement which astounds the reader: "Absorption while a function of dead tissue is antagonized by living tissue." Gentlemen, can anyone in the light of modern knowledge speak of dead tissue. Is not every particle and cell in the body composed of atoms which vibrate with an energy and a velocity than can mean but the very antithesis of the common meaning of the word death. Has not every cell in the organism within it a potential energy which can be converted into kinetic energy? Tas every cell not the power of selection, assimilation, excretion and reproduction. Absorption means function, to functionate a cell must, we repeat, convert its potential energy into kinetic energy, and thus liberate force. Therefore, absorption calls for the essentials of life as represented by work accomplished.

We are asked to assume that the alimentary canal, the lymphatic system and the circulatory apparatus are empty when we begin the study of the tissue medium. We are told that on this assumption there is no blood in the mesenteric veins, so that absorption is impossible. Can we assume an impossibility? It may be denseness on my part, but I have not sufficient deductive reasoning to fathom the why and the wherefore. I use the word deductive because the author's reasoning is purely abstract. The author has presented an assumption for consideration, but the assumption to be of value must be based on the correctness of certain hypotheses or suppositions and we cannot follow him because his hypotheses are impossible and do not exist. These vessels are *never* empty and such a condition is unthinkable.

When we come to the discussion of the blood we are told: "The blood as it reaches the lungs is simply chyle," because we have to assume that the circulatory apparatus is empty and therefore it contains no tissue waste. How can we assume what is impossible and never exists because the blood as a fact when it passes from the right side of the heart into the lungs *is* filled with tissue waste, and it is not *chyle* but good venous blood. It would be just as easy to assume that H_2O would still be water if the

two molecules of hydrogen were removed. Then we are told that every phenomenon occurring in the blood while in the lungs results from the addition of oxygen to chyle.

We must go back, therefore, to a consideration of the functions of respiration. What is it that happens to the blood as it passes through the lungs? The hemoglobin held in the red blood cells of the venous blood as the latter passes through the alveoli of the lungs takes up oxygen from the respired air to form oxyhemoglobin, and represents a loose chemical combination of the atomic compounds which readily gives up the oxygen to the tissues for oxidation processes. Oxygen is therefore *absorbed,* it is *not secreted by the lungs,* as we are told in the article. Oxygen, we assert, is *not added to chyle,* it is held by the red blood cells and not by the plasma. Dr. McLaughlin tells us: "My argument is that the lungs act on the blood before it reaches the tissues." This is an elementary physiological fact which no one disptes. If the lungs did not do so the tissue waste CO_2, ammonia, etc., which they give off would very soon poison the organism and the want of oxygen destroy life. We cannot understand where the author of the theory obtained the impression that it is held by any physiologist that the blood is expected to pass through the lungs and the entire circulatory system, including the systematic lymphatics before it performs its functions.

Then when we come to the criticism leveled at the liver we are told that the author of the paper cannot accept the liver as an organ of digestion. Surely he is under a misapprehension, for the liver is not an organ of digestion but an organ intimately related to the general metabolism of the body. It is a great storehouse of carbohydrates and serves them out to the economy as they are required, it forms glycogen, which in a diffusible form passes into the blood stream, it has some relation to the breaking up of blood corpuscles and the formation of urea and metabolic products. It converts poisonous aromatic products of decomposition, *e. g.,* phenol, derived from proteids in the intestine into harmless compounds, and lastly it *secretes* bile. These are the functions of the liver and they are not digestive.

It plays a rôle in a certain period of development in the formation of blood corpuscles, but only to a very minor degree. Blood is not derived from bile and it plays no direct part in its formation in adult life.

Referring again to the bile, the author must surely be misinformed when he accuses investigators of accepting the theory that bile is a secretion as a trust handed down from first investigators. The speaker had the privilege of studying physiology under that great physiologist, the late Professor William Rutherford, Professor of Physiology of the University of Edinburgh, and the discovery of the bile pigments, bilirubin, biliverdin and bilicyanin, in fact, Rutherford was known at the 'varsity as "Bilirubin," and we can assure Dr. McLaughlin that "Bilirubin" accepted nothing in trust, and he proved fully that bile is a secretion, and at the same time he showed clearly the functions which are performed by the bile in the working of the organism. The author's conclusions that the bile and the pancreatic secretion are really excretions, have no concrete physiological data for a foundation. His assumptions are based on the abstract. In referring to this tissue medium in the lymphatics we have gathered that the author of the theory has not grasped the actual physiological function of these vessels. The lymph which permeates every tissue of the body, supplying the nutriment and enabling the tissues to get rid of the waste products resulting from their metabolism is collected and returned to the blood in special tubes, which we know as the lympatics, but the lymph which they contain is supplied not by these lymphatic vessels but from the blood stream directly by filtration through the capillaries into the tissues. By some it is held that the lymph is to a certain extent also secreted by the cells of the capillary walls. Therefore the function of the lymphatic vessels is that of a collecting mechanism for returning the used up lymph and the waste products it contains to the blood stream for purification and a fresh supply of nutriment.

I have endeavored to place these physiological suggestions before you for your consideration, and I trust I have not utterly

failed to meet the task which was deputed to me. The criticisms are made with a view of stimulating others to like investigations, and to follow in the commendable footsteps of Dr. McLaughlin. The latter's contentions do him credit because they show he is seeking information and is one of those inquiring minds delving for truth, and if he be a physiological heretic all the more glory to him. Heretics are the salt of the earth, for they made men think and open their minds to liberty and truth. We need but turn to Biblical history, if you will but permit me to touch on so sacred a subject, and we will find that the greatest heretic this world has ever known is that commanding Presence and Figure which fills the pages of the New Testament.

A NEW VETERINARY ASSOCIATION ORGANIZED IN MINNESOTA.—Minnesota veterinarians living in and near the Twin Cities recently met and organized an association, to be known as the Twin City Veterinary Association. However, the members of the association wish to make it plain that any reputable graduate, whether in Minnesota or an adjoining state, will be welcome in membership and attendance.

It is expected that a considerable number of veterinarians practising at railroad points within convenient distance of the Twin Cities will take an active part with veterinarians from St. Paul, Minneapolis, South St. Paul and University Farm. Records show that there are eight licensed graduates in Minneapolis, eleven in St. Paul, sixteen in South St. Paul, seven at the University Farm. The purpose of this new association is mutual improvement in professional lines.

It is the plan of the present management to have at least one paper on each program that shall be distinctly educational along scientific lines. We wish to make it plain that this is to be in no sense another state association and is not to conflict in any way with our present state association.

Dr. F. D. Ketchum, South St. Paul, was elected president; Dr. L. Hay, Faribault, vice-president; Dr. Reynolds, University Farm, secretary.

NONE BETTER PRINTED.—A Minnesota veterinarian writes: "Enclosed find check and exchange for renewal to the REVIEW. None better printed."

THE UNITED STATES GOVERNMENT MEAT INSPECTION.*

By Veranus A. Moore, New York State Veterinary College, at Cornell University, Ithaca, N. Y.

There is no public service in which sanitarians should be more interested than in the United States Government meat inspection. There is no other protective service in connection with food production that has been more difficult to establish, that has had greater obstacles to overcome, that has made more rapid progress and that has protected more people. Although the first legislation relative to federal meat inspection—that of August 30, 1890, and March 3, 1891—pertained more to the finding of a market for our pork and pork products than to safeguarding the people against unwholesome meat, it was the beginning of what has developed into a Federal meat inspection which compares most favorably with any other in the world. This is a strong statement, but it is not made with a spirit other than that of genuine appreciation that our government officials have profited by the experience of the pioneer nations in this work and have incorporated as far as possible the best of modern methods on the subject.

The law of 1906 authorized the Secretary of Agriculture to prescribe regulations for the careful inspection, for disease or other unwholesome conditions, of the carcasses of animals at the time they are slaughtered; to require the packing houses to be kept in a sanitary condition; and to inspect all meat and meat products before they are placed on the market. This authority applies only to those establishments which are engaged in export or inter-state trade. Following the enactment of this law, it was necessary for the Department of Agriculture to prepare and enforce regulations to cover the three essential points, viz.: The

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inspection of carcasses; the sanitary control of the establishments; and the reinspection of the meat and meat products.

The efficiency of a meat inspection service depends upon two important factors, viz.: The comprehensiveness of the regulations and the thoroughness with which they are enforced. The sanitary value and justice of the regulations are measured by the extent to which they embody protection against unsanitary handling of carcasses and the effect of disease and spoiled meat upon the consumer; and the degree to which they are enforced rests with the executive, educational and moral qualities of the inspectors.

In the growth of the present government regulations, it should be stated that under the legislation enacted prior to 1906 the Secretary of Agriculture had issued regulations relative to the inspection of animals before and after slaughter, and had prescribed rules for the condemnation of carcasses because of disease and injuries. These are known as Bureau of Animal Industry, Bulletin No. 9 (1895), Order No. 33 (1899), Order No. 125 (1904) and Order No. 137 (1906), and various amendments thereto. In the formulation of that part of the regulations pertaining to the disease of animals and the physical conditions that should condemn the carcasses, the experiences of other governments, especially Germany, were largely drawn upon. After the law of 1906, which extended the authority of the Secretary to the sanitary control of packing houses and to the inspection of the preserved meat and meat products, he appointed a commission to revise the regulations that were in force at the time the new law went into effect concerning the inspection of animals for disease. This commission was headed by Prof. W. H. Welch, of The Johns Hopkins Medical School. The commission recommended certain changes in the regulations then in force and these were adopted by the Department. The regulations of 1907, known as Order No. 150, and which are still in operation, are more rigid than those of other countries, in that they do not provide for the sale, under prescribed restrictions, of certain classes of meat which other countries utilize. The principle

underlying these regulations is that if an animal is diseased or injured in such a way that its flesh may be dangerous or unsafe for the consumer, its carcass shall be condemned. The regulations give to the consumer every possible protection. The extent of this protection is illustrated by the last report of the Bureau of Animal Industry, which states that during the year 1911 Government inspection was carried out in 939 establishments located in 255 cities and towns. There were 52,976,948 carcasses inspected, of which 117,383 were condemned and 82,710 passed for tallow and lard. In addition to the inspection of the carcasses at the time of slaughter 6,934,233,000 pounds of meat and meat products were inspected, and of these 21,073,577 pounds were condemned.

The qualifications of the veterinary inspectors are assured by the requirements imposed by the Government that, first: He must have graduated from a recognized veterinary college; and second, that he must have passed to a civil service examination in veterinary medicine. Again, to insure for the inspector a more thorough scientific training, the Department, some years since, prescribed the minimum requirements, in the way of curriculum, equipment and teachers, for the veterinary colleges whose graduates are eligible to take the examination.

In organizing the Meat Inspection Service under the law of 1906, the Government secured trained and experienced men to assist in formulating regulations for the guidance of the inspectors. Likewise the veterinary inspectors have been taken from those who have qualified by their special training and who have been successful in a competitive, technical examination. The meat inspectors are also trained men and skilled in the detection of tainted or sour meat. I do not know of any better mechanism for securing an efficient public service.

The sanitary control of the packing houses presents difficult problems. In many ways, they are more trying to deal with and harder to overcome than the inspection of the carcasses. The meat business, in this country, began in a small way and after the fashion of the country butcher. The killing and dressing of

animals for food has always been looked upon as a disagreeable task; because of the dirt and filth associated with it the inference seems to have been that the work should be done in a dirty place. With the growth of our population, business rapidly increased and necessitated such repeated additions to the slaughter houses that at the time the present law went into effect, there were many large, poorly planned, dark, unventilated structures. They conformed, however, to the general idea of the meat business at the time they were built and the public did not object to them then any more than the masses do now to the local uninspected slaughter houses. The law of 1906 required that the packing houses having Federal inspection be made sanitary. In response to this, the worst of the buildings were in some cases condemned, and in others were entirely replaced by new structures. The better ones were more or less remodeled. Windows and skylights were put in, the old, half rotten wooden floors were replaced by brick, or cement. The walls were either cleaned and painted or were rebuilt with brick, title or cement. Toilets and dressing rooms for the men were put in, and ventilation, water and drainage supplies. Suitable benches, tables and trucks were provided for holding the viscera and for handling the meat. A system was instituted for frequent and thorough cleaning of the floors, walls and all tables, trucks and implements. The coolers were repaired. The wagons for transferring the meat were kept clean. In fact a great change took place. Actually millions of dollars were spent in bettering the conditions for the more sanitary handling and preserving of the meat and meat products. This work is still in progress. I have personally observed in New York, Buffalo and Philadelphia extensive building operations in connection with the packing house business, and I am informed that the same is true in other places. While there still remains old buildings, there is not to my knowledge a single packing house having Federal inspection that is not kept clean and in such a sanitary condition that meat can be handled within it in a wholesome manner. I know of no other industry where such large expenditures have been made in so short a time to improve the conditions for protecting the product.

In the evolution of our meat inspection service teachers as well as pupils have had to learn. Nowhere in Europe is slaughtering done on so large a scale as in this country. There is still much to learn about almost every feature of the packing house business with reference to the best facilities and methods of inspection. But the splendid co-operation usually existing between inspectors and packers will hasten the time when throughout the establishments the most desirable equipment will be installed and the most sanitary methods for inspecting and handling the meat will be employed.

Although the Bureau of Animal Industry has enforced a thorough meat inspection, with every year showing improvement over the previous one, there have been numerous and unjust criticisms of the work. Its very success is a challenge to the destructive critic. There is no one more familiar with the weak places in this service and the difficulty in correcting them than the Department itself. Seven years ago our Government stepped into the business offices of hundreds of establishments and practically said to the proprietors, "You must submit to our directions regarding the condemnation of carcasses and preserved meats. You must put your establishment in a sanitary condition, you must do as we say or you can not continue your business." More trying than persuading the packers of the justice of this new regime was the necessity of employing hundreds of inexperienced veterinarians to enforce the new law. This was a herculean task for the Department of Agriculture. However, the law was obeyed and a great reform took place in the sanitary methods of handling and inspecting meat. While criticisms have been frequent, I have failed to see in the public press any statement concerning the splendid work of the Department and the wonderful progress which has already been made in safeguarding the public against unwholesome meat food. The insanitary and filthy slaughter houses have been transformed under inspection into sanitary places where meat is handled in a cleanly manner. The packers have learned that good sanitation in their places of business is a valuable asset. The meat inspection service can never

be perfect because of the human element involved. Accidents will happen, mistakes will occur and errors in judgment will be made. These will exist under any system that can be devised.

An analysis of the criticisms will show that they are petty, being based on some error or accident or more general attack upon the service. They are largely along two lines, namely, administrative and faulty regulations. The administrative complaint has been largely in connection with the Service Bulletins. A careful study of these Bulletins shows that they are virtually letters of instruction from the Chief of the Bureau to the Inspectors, and necessarily are not of general interest to the public. They are in the interest of efficient inspection and nothing else. The objections to the regulations seem to be confined to the fact that the flesh from animals in which there are certain localized infections or injuries is allowed to pass into the meat supply. These criticisms are based on the aesthetic rather than the sanitary consideration of the subject.

The time seems to have come when a statement of a few principles which should control meat traffic and meat inspection would be helpful. The purpose is to care for animals in such a way that they will remain well, and when they are dressed for human food to handle the carcasses in a cleanly manner. The inspection implies that they shall be condemned if they are found to be diseased. and passed if they are sound. It is well to remember that technically these are relative terms. The so-called sound bullock may be carrying in his intestines the baccili of tetanus, botulism and malignant oedema. If from the south his blood may be able to produce Texas fever in susceptible cattle; his heart muscles may be loaded with sarcosporidia; and the walls of the stomach and intestines may be infested with animal parasites. More than this, there may be the organized remains of pneumonia, pleuritis, or peritonitis and the scars of former fractures of ribs and limbs may be found.

Among the infectious transmissible diseases may be mentioned anthrax, rabies, foot-and-mouth disease, tuberculosis, paratyphoid infections and trichinosis. The flesh of animals in-

fected with these diseases is not known to be dangerous to man after thorough cooking, if we except those affections due to the group of paratyphoid or paracolon bacilli. This statement has a broad historical basis, for in centuries past flesh from animals thus affected was frequently or even regularly consumed. Each disease has to be considered by itself, if we wish to single out and define the danger to man. The real danger in such diseases as anthrax, rabies and glanders lurks in the handling of the carcass and in eating the uncooked meat by the unsuspecting purchaser and in the further dissemination of the specific infection. Hence all traffic in any or all portions of carcasses affected with these diseases is prohibited. Trichinous pork is harmless to manipulation but highly dangerous as an uncooked food.

An examination of the field of animal pathology shows that we actually have few ideally healthy animals. It is hardly to be expected that we should have. The abnormalities encountered are of many kinds, ranging from mere carriers of virus to various stages of local or general diseases. The trained inspector's function is to save meat wherever that can be done, rather than to reject it. The process of rejection is easy, but there would be little meat handled and sold if every minor blemish were counted against the animal.

As a result of this state of affairs, we find inspection of meats governed by different regulations in different countries. The meat inspection laws of Germany are far less exclusive, but at the same time more highly developed and worked out in more minute detail than in this country. As Smith has pointed out, diseased meat is there defined solely in accordance with the potential danger to the health of the human species and to other still healthy animals. Meat is classed as utilizable, non-utilizable and of inferior grade. A fourth class is created which is utilizable only under certain restrictions. These are that it be sold after sterilization at a lower price and only in small quantities to any one purchaser. In Germany a considerable percentage of animals which our Government inspectors condemn are used for food.

There are many problems for the authorities to settle in the

conduct of the meat inspection service and the proper classifications of meat and meat products based on their nutritive value and the physical state of the animals from which they come. The details are intricate and complicated. There are other serious questions relative to the spread of certain diseases of animals where the virus is known to be present in the tissues for several days before the disease can be detected by either symptoms or tissue changes. These problems will eventually be solved and the troublesome questions answered "if our Government inspection is continued as a scientific, non-political and strictly civil service organization."

In the final adjustment of our meat inspection a number of changes will undoubtedly be made. The economic or financial aspect of the whole problem will be of no small importance. The strictness with which animals will be condemned because of local conditions or slight disease will eventually be governed by the law of supply and demand. If our meat supply becomes a continuously diminishing quantity, our standards will change and we shall come down more and more to the question of healthfulness, irrespective of other considerations. Because of the general popular misconception at the time the present law was enacted, regarding the dangers to the human family from diseased meat, the regulations of our Government are in some respects severe. We were not ready to accept the classification of meat foods as recognized in other countries. In this work we are still young. To attain perfection in equity to the live stock owners and protection to the public from our Government meat inspection service, we must abide the ripening influence of years.

The lesson for veterinary sanitarians to learn from our Government inspection and to teach in their respective communities is the need for municipal and State inspection that will insure to the people of the country protection against locally killed meat and the insanitary methods of handling it. With our best animals going to distant markets and the others left for the uninspected slaughter houses, it is easy to understand why locally killed meat may be inferior to that of the inspected houses. A State and

municipal inspection would be of great service in finding the centers of infection in our farming community, thereby making it possible to eradicate the infectious diseases from the locality. Further, it would educate cattle owners in the necessity of exercising great care for the protection of their stock. With about forty per cent. of our meat and meat products still uninspected, we can not hope for the maximum benefits of such a service. As sanitarians, it would seem that our first duty in this matter is to support the efforts of our Government in building up an efficient meat inspection service and our second duty to use our influence in extending its benefits to the country as a whole by supplementing it with the institution of Municipal and State Meat Inspection.

VETERINARY CONFERENCE AT ITHACA.—By authority of Director Moore, of the New York State Veterinary College at Cornell University, Ithaca, N. Y., we announce the date of the annual conference of veterinarians as January 8 and 9, 1914. There will be an unusually interesting list of speakers; among them Dr. John Adams, of the University of Pennsylvania, and Dr. Theobold Smith, Professor of Comparative Pathology at the Harvard Medical School, who will discuss the subject of vaccines. Mr. J. C. Buckley, editor of the *Horseshoers' Journal*, and President of the National Horseshoers' Association, will address the gathering. Commissioner Huson, of the State Department of Agriculture, has also promised to give an address on "The Relationship of the Veterinarian to the State." An interesting clinic is assured, and no veterinarian that can possibly attend should miss the opportunity of participating in this great educational function.

YOU MUST SHOW THE MAN FROM MISSOURI, and the following from a Missouri subscriber would indicate that we had, as in renewing his subscription he says: "I do not want to miss a single copy; I appreciate your efforts to keep the REVIEW up to its high standard. You have done the profession a lot of good in the past, and *deserve* the confidence and good will of the veterinarians of this country, both of which you have."

PURE MILK PRODUCTION AND THE ABORTION BACILLUS.*

By E. C. Schroeder, M.D.V., Superintendent, Bureau of Animal Industry Experiment Station, Bethesda, Md.

The dangers incident to the use of raw milk remain too commonly undervalued, notwithstanding that available evidence proves that it is impossible to produce milk, under the most favorable, economically obtainable conditions, unfailingly free from pathogenic contaminations, or free, even (a matter of primary importance to veterinarians) from those agents of disease that propagate within and emanate from the bodies of dairy animals. Too many physicians and, under their influence and guidance, too many other persons, on the basis of hypothetical objections, remain averse to the use of heat to neutralize dangers that may be hidden in raw milk of seemingly the best quality, or perfect milk according to all tests that can be applied to it before it is too old for use. Such dangers are unsuspected until they are revealed too late by the harm they have done so often that it is difficult to convince those who have escaped them that they are real and serious and not rarely fatal, or that an article of food, in itself harmless, wholesome, nutritious and practically indispensable, repeatedly serves as a medium for the multiplication and dissemination of virulent disease germs, and that it is one of the commoner sources to which epidemics are traced with unquestionable certainty. And, unfortunately, much of the harm done by the use of raw, contaminated milk is so insidious in its development that a true conception of the magnitude of raw milk dangers is often defeated by the fact that most of us can point

* Presented to the Fiftieth Anniversary Meeting of the American Veterinary Medical Association at New York, September, 1913.

to instances in which inferior, stale and bacteria-laden milk has been consumed in large quantities without doing harm that is traceable to it.

Hence, the object of this short paper is less to define one of the more recently discovered dangers that needs mature consideration in all attempts to produce pure milk, than to make a new appeal to good, sound sense against the use of milk in its raw state, by presenting an addition to the ever-increasing, irrefutable evidence that supports the conclusion, almost unanimously indorsed by sanitarians who have studied the milk question, that all milk should be made truly safe by pasteurizing, scalding or boiling it before it is used as food.

The bacillus of infectious abortion of cattle is an extraordinary organism; it is capable of affecting widely different species of animals; the lesions it causes in some species are wholly unlike those it causes in others; it has the faculty of maintaining itself long periods of time in living animal tissues without causing macroscopically discoverable lesions; it may live, weeks and months, in the living tissues of such widely different animals as monkeys, pigeons, rabbits, rats, mice, guinea pigs and cattle; (1) it may occur in the milk of cows months before it causes them to abort; it has been found in the milk of cows that have not aborted and which afterward, without aborting, while the bacillus continued to occur in their milk, produced a succession of healthy calves at full term, and many cows that are invaded by it, if not most, as indicated by tests at the experiment station, become chronic carriers of it and continue to expel it from their udders with their milk indefinitely. In several cases, under continued observation, repeated tests proved that it remained as a contamination in the milk of infected cows two, three and longer than four years.

The long persistence of the bacillus in the tissues of animals has a parallel in the continued persistence of tubercle bacilli in the tissues of even those animals for which they are not truly pathogenic, but in one respect it is a wholly different phenomenon. Tubercle bacilli persist in localized, usually encapsuled lesions,

which soon lose the character of living tissues, while the abortion bacillus is diffused throughout one or more organs in which frequently no lesions can be discovered. Whether it multiplies during its residence in such organs, as it certainly must in the udders of infected cows, or whether it is simply stored in them until it is slowly and gradually destroyed, remains an unanswered question.

Another unanswered question is whether it actually injures human health? In the report of the British Committee appointed by the Board of Agriculture and Fisheries to inquire into epizootic abortion, the following significant statement is made: (2)

"Although it is hardly germain to the present inquiry, we think it advisable to point out that, since the bacillus of infectious abortion of cattle is pathogenic for so many species, the possibility of the human female being infected should not be lost sight of."

This statement was made before it became known that the bacillus is of common occurrence in the milk of cows, or that it occurs in milk at all, and hence, before it was known that human health is repeatedly and directly exposed to it through the use of raw milk and other dairy products derived from raw milk.

Dr. Theobald Smith,(3) whose judgment we should know how to value, in an article on the abortion bacillus by himself and Marshall Fabyan, called attention to the possibility that it may cause disease in persons, and, only recently, at the last annual meeting of the American Association of Medical Milk Commissioners, Larson and Sedgwick, of Minnesota, reported that they had made 425 complement deviation tests with the blood of children, in which the abortion bacillus was used as the antigen, and that they had obtained 72 or 73 positive reactions. The claim was made in connection with these tests that the proportion of reactions would have been greater had the tests been confined to children fed on raw cow's milk, and this claim we can readily credit when we know that the abortion bacillus is capable of maintaining itself for many weeks in such dissimilar environ-

ments as the living tissues of monkeys, pigeons, various rodents and cattle.

Most bacteria that gain entrance to the living tissues of animals for which they are not pathogenic disappear quite rapidly, and bacteria also disappear quite rapidly from the living tissues of animals for which they are virulent after immunity against them has developed. In this respect the long continued persistence of the bacillus of infectious abortion in the living tissues of different species of animals may be looked upon as a significantly important form of parasitism to which human bodies should not be subjected.

We may say, relative to the bacteria against which human health should be guarded, that it is questionable whether repeated exposure to a bacterium, pathogenic for any species of mammals, can be practised with impunity; that it is dangerous to permit repeated exposure to any bacterium that is pathogenic for several species of mammals, though it may be, as far as we are informed, harmless for human beings, and that it is a deliberate invitation to disease to permit repeated exposure to a bacterium, like the abortion bacillus, that is pathogenic for widely different species of mammals and is known to cause changes in human bodies that can be detected by complement deviation or other bio-chemic tests or tests of any kind.

And now, as the importance of a menace to public health depends largely on the frequency with which exposure to it occurs, let us examine the available data on the occurrence of the abortion bacillus in the commercial milk supply.

During the years 1893 and 1894 I made a number of tests, under the direction of Dr. Theobald Smith, who was then in charge of the Division of Pathology of the U. S. Bureau of Animal Industry, on the occurrence of tubercle bacilli in the milk supply of Washington, D. C. Among the guinea pigs injected with milk one showed lesions on post-mortem examination closely resembling tuberculosis, but in which no tubercle bacilli could be found. Dr. Smith studied the lesions and, in a foot note to my report on the milk tests, described them with so much precision

and clearness that no one informed on the subject can read his description now without recognizing that they were the characteristic, almost unmistakable lesions caused in guinea pigs, as we have since learned, by the bacillus of infectious abortion of cattle. (4) Subsequently, abortion disease was not again found in guinea pigs injected with milk, or if found was insufficiently described for recognition, until the year 1907, when a number of guinea pigs injected at the experiment station with samples of milk from the Washington supply showed lesions easily mistaken for tuberculosis, but in which tubercle bacilli could not be found after prolonged search. The failure to find such lesions between 1894 and 1907 can possibly be explained by the small number of milk tests with guinea pigs made during this interval of about 12 years, as abortion disease in milk-injected guinea pigs has been far from uncommon at the experiment station during the last six years.

The disease in the guinea pigs was soon proved to be transmissible from guinea pig to guinea pig through the inoculation of small fragments of affected organs, and its cause was traced through guinea pig injections to its source in the udders of seemingly healthy cows. Beyond this it remained a puzzle until the year 1910, in which improved facilities for bacteriological investigations at the station enabled Cotton and myself to isolate a bacillus from affected guinea pigs and to prove it to be the true cause of the disease. The bacillus, at first believed to be a previously undescribed organism, was the subject of two papers in 1911, one presented to the American Association of Medical Milk Commissions (5) and the other to this association, (6) and was definitely identified in 1912 as the bacillus of infectious abortion of cattle. (7)

Without entering into lengthy details about experiment station milk tests, made under my supervision by Drs. Cotton and Brett of the station, the factors brought out, pertinent to the subject under consideration, are the frequency of the bacillus of infectious abortion, as shown by guinea pig injections, in all samples of milk tested from 1907 to 1912, inclusive; the relative

frequency of contamination, respectively, in 1907 and 1912, and the frequency with which the milk of individual daries is contaminated.

From 1907 to 1912, inclusive, 516 samples of milk from 90 different dairies were injected into 1,068 guinea pigs. Among the guinea pigs 237 died prematurely from intercurrent affections, and among the remaining 831 abortion disease was found on post-mortem examination in 103, or over 12 per cent. The infected milk was obtained from 29 different dairies, showing that nearly one-third of the dairies included in the tests from time to time distributed milk contaminated with living abortion bacilli. The same tests yielded 10 cases of tuberculosis, which were chargeable to the milk of seven different dairies.

Some of the milk tested was sold as pasteurized; in two samples of this living abortion bacilli, and in one sample living tubercle bacilli were found, proving that commercial, unsupervised pasteurization is not reliable. And some of the milk was sold as "special milk," probably "special for infant feeding," and this caused two cases of abortion disease, proving that the name "special" is no guarantee against living disease germs in milk.

That commercially pasteurized milk, pasteurized without satisfactory, official supervision, at times causes abortion disease and tuberculosis in guinea pigs injected with it, should not be construed as a charge against the efficiency of pasteurization to check milk dangers due to living pathogenic agents. At the experiment station many hundreds of guinea pigs have been injected with milk known to contain either or both abortion and tubercle bacilli, some with portions of the milk in its raw state and others with portions of the same milk, obtained at the same time, from the same sources, in the same containers, after it had been pasteurized by station employees at 60 degrees C. (140 degrees F.), maintained for 20 minutes. In no instance, among these hundreds of guinea pigs, was either tuberculosis or abortion disease caused by the injection of the pasteurized milk, while nearly all of the guinea pigs injected with this infected

milk in its raw state contracted either or both abortion disease and tuberculosis.

In the year 1907, 36 samples of milk from 32 different dairies were injected into 72 guinea pigs. Among the guinea pigs nine died prematurely from intercurrent affections, and among the remaining 63 abortion disease was found on post-mortem examination in eight, or over 12½ per cent. The infected milk was obtained from five different dairies, or over 15 per cent. of those included in the tests. The tests yielded three cases of tuberculosis, which were chargeable to the milk of two different dairies.

In the year 1912, 77 samples of milk from 40 different dairies were injected into 154 guinea pigs. Among the guinea pigs 69 died prematurely from intercurrent affections,(8) and among the remaining 85 abortion disease was found on post-mortem examination in 26, or over 30 per cent. The infected milk was obtained from 15 different dairies, or 37½ per cent. of those included in the tests. The tests yielded two cases of tuberculosis, which were chargeable to the milk of two different dairies.

A number of tests on six, eight, ten or more consecutive days were made with milk from several large dairies, and these proved that most distributing dairies that sell milk collected from a number of different farms can be shown, if a sufficient number of tests are made, to be vending milk that is intermittently contaminated with abortion bacilli.

We may tabulate the results of the tests as follows: Six-year period, 1907 to 1912, inclusive, 30 per cent. of all dairies tested more or less seriously infected with abortion disease; one year, 1907, 15 per cent. of all dairies tested infected; one year, 1912, 37½ per cent. of all dairies tested infected.

The force of this evidence is strengthened by the fact that a sufficient number of tests with the milk of almost any large distributing dairy will sooner or later reveal abortion disease.

No one, it seems, can contemplate the facts without realizing that the frequency of abortion disease among dairy cattle is increasing at an alarming rate. Possibly the conditions among cattle elsewhere are not as serious as in the environment of the

District of Columbia, at least, it is sincerely hoped that this is the case, but whether it is or no the great frequency with which the abortion bacillus occurs in the commercial milk supply of Washington, and the increasing frequency with which milk is infected with this remarkable organism, which seems to belong in a class by itself, should convince us that milk, pure enough for use in the raw state, can not be produced anywhere.

The difficulties attending the production of milk free from the abortion bacillus are well illustrated by an investigation at the experiment station on the relative value of raw, pasteurized and boiled cow's milk as a food for young animals. In the investigation 467 guinea pigs were fed artificially on cow's milk from birth until they were weaned. One-third of the young animals received raw milk. Though unusual care was taken by men who are well informed on the nature and sources of milk contaminations to obtain milk of the purest kind for the investigation, from station cows that were under constant supervision, it was found before the investigation, which extended over several years, was concluded, that some of the guinea pigs which were fed raw milk had become infected with abortion disease. It may be well to add that it is not difficult to infect guinea pigs with abortion disease by feeding them milk that contains the abortion bacillus, and that the investigation proved that boiled cow's milk, from every point of view, is a more satisfactory food for young guinea pigs than raw cow's milk.

I am convinced, if we had no other contamination in milk to deal with than the abortion bacillus, and it is only one of many dangers, some of which are more definitely known to attack human health, it would be amply sufficient to justify the conclusion that it is imperatively necessary to resort to heat as a simple and inexpensive expedient to make all milk safe before it is fed as food.

But we should not permit the availability of so simple and economical an expedient as heat to lead to a relaxation of those precautions that insure the cleanliness, freshness and general excellence of milk, because carelessness, lack of cleanliness, the

retention of diseased animals in dairy herds, etc., etc., engender milk dangers that cannot be corrected by heat.

What we should strive for is the cleanest and best, the freshest and purest milk that can be produced, made safe by its exposure to heat under competent, reliable, official supervision.

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(1) Marshall Fabyan, *Journal of Medical Research*, Vol. XXXVIII, No. 1.

(2) Report of English Committee, Part I., page 15, London, 1905.

(3) Theobald Smith and Marshall Fabyan, *Centralblatt für Parasitenkunde und Infectionskrankheiten*, Vol. 61, No. 7.

(4) E. C. Schroeder, Bureau of Animal Industry, *Bulletin* No. 7.

(5) Proceedings of the American Association of Medical Milk Commissions for the year 1911.

(6) Proceedings of the American Veterinary Medical Association for the year 1911, also AMERICAN VETERINARY REVIEW, Nov., 1911.

(7) Bureau of Animal Industry, Circular No. 198.

(8) The high mortality from intercurrent affections during the year 1912 was largely due to the milk of one or two dairies, from which samples were secured and injected into guinea pigs on a number of different days and which almost invariably caused acute, rapidly fatal peritonitis.

IMMIGRATION—DOMESTIC AND FOREIGN is the title of an address delivered before the Mississippi Valley Immigration Association, recently, by Dr. W. H. Dalrymple, of Baton Rouge. The doctor stated amongst his strong arguments in favor of immigration to his adopted state: "Perhaps the most emphatic indication of Louisiana's need of immigration (and this may also apply to other Mississippi Valley states) is her approximately 23,000,000 acres of practically idle land that simply await the touch of the intelligent agriculturist, to yield bountifully of almost any farm crop that can be grown, and its possible maintenance of endless numbers of any and all of the varieties of farm animals, more particularly those which we term the food-producing class—beef cattle, dairy cattle, hogs and sheep." That surely sounds encouraging, and that and a hundred equally impressive statements, put forth by the doctor in his earnestness and enthusiasm, should, if distributed before the right people, bring many, agriculturally inclined, to the Mississippi Valley and increase the field of the veterinarian in the South.

THE next annual meeting of the Tennessee Veterinary Medical Association will be held in Nashville some time during the month of November, 1914.

ELIMINATION OF SOURCES OF CONTAMINATION IN MILK.*

By W. D. Frost, Ph.D., Dr., P.H., Associate Professor of Bacteriology, University of Wisconsin.

Meaning of Contamination.—In considering this subject it seems necessary at the very start to define the sense in which the word contamination is to be used. It may be used to mean the entrance into milk of any and all foreign matter, such as dirt or bacteria. In this sense all milks are contaminated, except perhaps some of the certified or, as we might call them, the aseptic milks; but such milks are impractical for general use. On the other hand, we may consider contamination in a broader sense to mean the pollution of milk with material that is likely to endanger the health of those who use it; such a milk has a dangerous taint; its consumption jeopardizes the health of those who partake of it. The word is used in the latter sense in the present paper. According to our present knowledge it is not possible to produce milk on a large scale that is uncontaminated in the narrow sense, but it is possible and profitable as well to produce a milk that is free from danger to those who use it.

It is now quite generally recognized that milk as it comes from the udder of the healthy cow is not germ free, but, contrarywise, may contain a considerable number of bacteria. Such a milk, however, gathered with reasonable care, should not be considered contaminated. A contaminated milk contains either disease-producing bacteria or an excessive number of harmless bacteria, which, though harmless in themselves, may be harmful in large numbers. This form of contamination, because of its

* Presented to the seventeenth annual meeting of the U. S. Live Stock Sanitary Association, Chicago, December, 1913.

frequency, is most serious, especially where such milk is fed to infants.

The contamination of milk needs to be considered not only from the standpoint of public health, but also in regard to its keeping qualities. If a milk could be secured with no greater contamination than it has in the udder of a cow its keeping power could be measured in days where a contaminated milk might keep only as many hours. A milk so contaminated that its keeping power is short disgusts the consumer, and like a "boomerang" comes back to both producer and purveyor in decrease sales. The production of an uncontaminated milk is a subject worthy of the most serious consideration and of sufficient importance to engage the attention of the ablest workers.

The Cow as a Source of Contamination.—The diseases transmitted from the cow to man through milk are anthrax, malta fever, foot and mouth disease, milk sickness, mammitis, septic sore throat and tuberculosis. Most of the diseases in this list are, now-a-days, fortunately only remotely serious, but deserve a word in passing. *Anthrax* readily effects cows, but, due to the rapid course of the disease which ends in death in a few hours, the milk is suppressed or rendered so abnormal that it is not likely to be used. The anthrax bacillus has, however, been recovered from cow's milk. That the dangers from this disease are within the range of possibilities was shown by an epidemic of this disease which occurred among the herds supplying the City of Chicago. In 1910, five hundred cows were exposed and eighty-seven became infected. All milk from the farms where the disease existed was destroyed and great care was taken to prevent the sale of milk from the suspected districts, and as a result no human cases were attributable to milk infection.

Cows are susceptible to the germ of Malta fever and this germ has been found in their milk. The infection of man, however, from this source is not recorded although goat's milk is the usual means of transmission in this disease.

Foot and mouth disease which occurs in cattle can be transferred to men, especially children, through the milk, and five epi-

demics of this kind have been reported in this country. The disease is widely prevalent in Europe and Asia.

Milk sickness was formerly important, but is now practically unknown in the United States, except in sparcely populated portions of North Carolina, Tennessee and Texas.

Mammitis, mastitis or garget, is a common and well recognized infection of cows. It is caused by various germs, but especially by streptococci and staphylococci. The milk from an infected cow can give rise to gastro-intestinal disorders, especially in children. The milk from such cows can usually be detected by a microscopical examination of the sediment. A milk sediment containing an excessive number of leucocytes, particularly when they are associated with streptococci, is regarded by some workers as almost invariably coming from infected herds. Some milk firms make routine sediment tests and report pus and streptococci to the producer, who it is claimed can usually locate the difficulty without trouble. If the gargetty udders are not readily found the milk from each individual cow is then tested with the usual result that the offending cow is found. Savage, of England, has carefully studied this condition, and fortunately is able to come to the conclusion that "the great majority of cases of bovine mastitis are due to an organism which is not harmful to man."

Closely associated with mammitis in cows is the question of the relation of septic sore throat to milk. Savage and Trask have collected the histories of twenty outbreaks of milk-borne sore throat which have occurred in England. Most of these epidemics have occurred in recent years. In this country we have all been startled by the appearance of several frightful epidemics. This disease appeared first in Boston in 1911, and since then in Baltimore, Concord, N. H., Chicago and elsewhere. The evidence is not sufficient to warrant a dogmatic statement in regard to the way in which the milk becomes infected in this disease, but until we know differently we are bound to regard mammitis and other streptococcus infections of the udder as a possible if not a probable source of infection. The tremendous morbidity and mortality

among the consumers as well as the financial loss among the producers of such an infected milk make the relation of septic sore throat to milk one of the great problems of the day.

Tuberculosis is a chronic disease of both the cow and man. That these diseases are intertransmissible there can not be the least shadow of a doubt. The only question is what per cent. of human tuberculosis is of bovine origin. We know that in all probability milk from infected cows is responsible for from a fifth to a fourth of the tuberculosis of infancy and childhood, and that is the source of from five to seven per cent. of all human tuberculosis. Some believe that it is even more important than that. Certain it is that its eradication is of sufficient importance to demand the best endeavors of all who love humanity and own cattle.

The elimination of these animal sources of contamination can be accomplished by testing with tuberculin all cows used in the production of milk and removing from the herds the reacting animals. Garget should be constantly in mind and when present the entire milk of the infected animal should be discarded so that it does not become human food. Sick cows, from whatever cause, are not proper sources of food for man. The danger from this source of contamination, namely the cow, can only be eliminated by eternal vigilance.

Health Tone of Cow.—The early idea that milk from a healthy udder, with proper care, could be obtained in a sterile condition is not in keeping with the facts as we know them. As a matter of fact, experience has shown that the most extreme care will not assure a milk with less than several hundred bacteria per cubic centimeter. It is further known that certain cows give an excessively high count in freshly drawn milk, *i. e.*, upwards of a hundred thousand. Whether such cows are in a perfectly normal condition or not is perhaps a matter of doubt, but one worthy of further study. Frost and Meyer already made some suggestive observations in this direction. They made a study of bacterial content of the milk from a series of cows from a certified herd in which it was shown that the only cow of the group studied having an excessively high count was the one which had been continu-

ously stabled for a period of six years. This work needs confirmation, it does not seem unreasonable to suppose that unnatural conditions such as continuous stabling and forced feeding would lower the health tone of an animal so that the natural germicidal properties of its body fluids would be subnormal, thus permitting the development of an abnormally high bacterial flora.

Contamination Through Handling.—In the handling of milk, opportunity for serious contamination occurs at several points. The sources of this contamination are: The exterior of the cow; the barn dust; the utensils; and the milker.

Fecal Bacteria in Milk.—From the coat of the cow come a great number and variety of bacteria, but perhaps the most dangerous are the fecal bacteria, or those belonging to the colon group and the sporogenes capsulatus group. The presence of these bacteria in milk is significant not only because they indicate manurial contamination, which in itself is undesirable, but because they may themselves at times at least possess pathogenic properties.

This source of contamination can be largely eliminated by comparatively simple precautions. The hind quarters of the cow should be brushed or curried at least one half hour before milking. The udder and flanks should also be washed with clean or sterile water and wiped with a clean towel. Under all conditions milk produced for direct consumption should be gathered in narrow topped milk pails, which reduce this source of contamination to a minimum.

Barn Dust.—The bacteria which come from the barn dust are of comparatively little importance to the careless producer, since in his case the lactic acid bacteria almost invariably overrun the air bacteria, but to the more careful producer they become a greater problem. These bacteria, in so far as they effect milk, are usually digestors, *i.e.*, they act on the protien rather than on the sugar of milk. The better grades of certified milks usually have these digestors in relatively large enough numbers to determine the character of the fermentation, as it has been my experience that such milks digest rather than sour on standing.

This source of contamination can be minimized by observing reasonable care in conducting the affairs of the barn. These particular bacteria are abundant in the dust from the field. This should then be so handled and at such times as to avoid dust at milking time. The same is true of the bedding and the dust from the currying of the cows.

Milking Utensils.—The care of the milking utensils is a matter of very considerable importance, since from this source come enormous numbers of lactic acid bacteria, as well as other kinds, whose presence in milk are of the greatest significance so far as the keeping qualities of the milk are concerned. This factor also is not without its sanitary significance, since many epidemics are on record as having their origins in the fact that bottles have been returned from infected households, refilled and distributed without being properly sterilized.

Contamination from this source can be easily eliminated where steam is available, since the effect of even a few minutes exposure to live steam is sufficient to kill pathogenic bacteria. In other cases much the same result can be obtained by the use of hot water. In the absence of hot water treatment with a suitable solution of chlorinated lime will be efficient.

The water supply of the dairy is a matter of the gravest concern. Its quality should be above reproach.

It should be stated in this connection that the handling of milk is a great multiplier of bacteria, and as a corollary that on this account milk should be handled as little as possible.

The Milker As a Source of Contamination.—The milker is no doubt the most serious source of contamination, since through him come the pathogenic germs which produce the most dangerous and widespread epidemics attributable to milk. These epidemic diseases are typhoid fever, scarlet fever, diphtheria and septic sore throat. There is no reason to doubt that the cause of these diseases in milk epidemics always enters through the handling of the milk by diseased persons, by "carriers" of these diseases, or through the water supply. To show that the dangers from this source of infection is not simply theoretical but has its

practical importance, one has only to turn to the literature of the subject. Our knowledge of milk-borne epidemics was summarized by Trask in 1908, and from him we learn that upwards of 500 epidemics have occurred and that 317 of these were typhoid fever, 125 were scarlet fever, 51 were diphtheria, and 7 were sore throat infections. The number of cases in these various epidemics have ranged from one or two to over 800. The largest number of cases in any one epidemic of typhoid fever was 362, in scarlet fever 813, in diphtheria 264, and in septic sore throat 7 (but it should be remembered in this connection that there were over 2,000 cases in the Boston epidemic of 1911).

The elimination of this cause of contamination is the most serious problem confronting the conscientious dairyman of today. It is quite easy to debar from milk-handling workmen who are actually sick and it would seldom happen that well-marked cases of disease would be the source of infection, especially in the larger plants. One trouble comes from the fact that during the prodromal stages of diseases, such as scarlet fever, they are quite as infectious, if not more so, than when these diseases are well advanced. Still more difficult is it to detect the "bacillus carriers," which are common in all these diseases. In the present state of our knowledge their detection is impossible.

What should be done—and the public can reasonably expect that it will be done—is to minimize the danger from this source by allowing only well people to milk; to temporarily debar from milking or handling the milk any who are ill, especially if such indisposition be in the nature of a sore throat, and particularly if this symptom appear in a young person who has not had diphtheria or scarlet fever. A person should not be allowed to milk who has a fever or who has diarrhoea. Nor should one be allowed to handle milk who comes in contact with anyone sick of an infectious disease. Where possible, all employees should be periodically examined by a competent physician, and while ill an employee should receive the usual compensation, otherwise he will not report slight, but nevertheless dangerous, indispositions.

It seems also well within bounds to require that all milkers

should have reasonably clean clothes, clean hands and good habits; such for example as would keep him from wiping his nose on his hands, as I have seen men do in capping bottles.

Flies should be kept out of milk and the dairy if possible. Cans and bottles should be so sealed as to prevent infection during delivery, for it must not be supposed that all of the contamination occurs on the farm—it may occur enroute to the city, in the city plant and on the premises of the consumer.

Finally, fine equipment of farm, dairy or pasteurizing plant is always to be commended, but by the same token it is always to be remembered that intelligent and painstaking care are the important essentials in the handling of milk.

SOME LEADING ARTICLES FOR OUR NEXT ISSUE.—Studies on the Virus of Hog Cholera (Walter E. King and Associates); The Control of Glanders in New York State (J. F. De Vine); Bovine Coccidiasis (Horace B. Jervis); The Diagnosis of Dourine by Complement Fixation (Mohler and Eichhorn); A Preliminary Report on the Value of Leucocytic Extract from a Therapeutic Standpoint (R. A. Archibald); The Control of Hog Cholera by Slaughter Methods (Geo. E. Hilton); The Present Status of the Control of Tuberculosis by Vaccination (S. H. Gilliland and C. J. Marshall); Tetanus (M. D. De Turk) and several others.

PERIODICALS RECEIVED AT THE REVIEW OFFICE.

Semi-Monthly Bulletin—Live Stock Sanitary Board (Penn.)
Bulletin Washington State Agricultural College.
Canadian Medical Association Journal.
Quarterly Bulletin—Chicago Veterinary College.
The Bacterial Therapist.
The Veterinary Journal (London).
The Live Stock Journal.
The Pacific Dairyman.
Hoards Dairyman.
Farmers Advocate.
The Breeder's Gazette.
The American Journal of Clinical Medicine.
The Cornell Veterinarian.
The Philippine Agricultural Review.
The Agricultural Journal (South Africa).
The Rider and Driver.
The Annals of Surgery.
The Veterinary Alumni Quarterly (O. S. U.)
New York University Calendar (Weekly).
The Philippine Journal of Science.
Memoirs of the Department of Agriculture in India (Veterinary Series).
Proceedings Washington State V. M. A.
Proceedings Colorado State V. M. A.
Announcement Kansas City Veterinary College.
Second Report Commission on Milk Standards, U. S.
Public Health Service.
Annual Report Inspector of Animals, Lawrence, Mass.
Our Dumb Animals.
Journal of Experimental Medicine (Rockefeller Institute, New York).
Experiment Station Record, U. S. Dept. Agr.
Veterinary Notes.
Expt. Station Report, Massachusetts.

VETERINARY LEGISLATION OF THE FUTURE OR THE DUTIES OF THE VETERINARIAN OF THE FUTURE.*

By Walter G. Hollingworth, D.V.S., Utica, N. Y.

Times change and people change. The horse and cow doctor of the past, with his crude, inhumane way of treatment of animals, is a matter of history to-day. The veterinarian is becoming a more recognized factor in all progressive communities; is looked up to with pride. All this has been brought about by education. The advancement that our profession has made in the past decade is no less than phenomenal; and greater advancement will be forthcoming in the near future. Those of us that are here in the next few years will see the veterinarians in greater demand as sanitarians. They will become specialists in this branch of veterinary science. The veterinary colleges are rapidly becoming better equipped to give students a more proficient course in sanitary police work. It is hard to prophesy the changes that are going to take place in the future; but I feel that when one is brought face to face with the situation and thinks over it carefully, he can see that all that is needed is patience.

Public sentiment will demand that the health of the community is to be more closely and scientifically looked after; and this will be brought about by legislation. The legislator needs to become better educated along those lines. Something that has not occurred to him in a large majority of cases. The public press of to-day is one of the best agitators and educators. The public are eager for knowledge especially if life longevity is assured. Their slogan will be "Better Health Facilities," and

* Presented to the Central New York Veterinary Medical Association, at Syracuse, November, 1913.

that we can guarantee, if given an opportunity. When we look over some of the different branches of our sanitary laws, and the way they are carried out, it is, to my way of thinking, no less than criminal. Why do not officials set aside politics and look after the health and welfare of their constituents? I hope and trust that I may live to see the time when our state and local governments can be run on such principles. The time must come when it will be a case of the "survival of the fittest," as far as those who have positions where the life of human beings are to be considered. When meat and milk inspection is placed in the hands of those who are competent, instead of laymen, who have friends who are a power politically, the only part of whose work they can do correctly is to draw their pay, the death-rate of the human race will be infinitely small, as compared to the present loss of life due to preventable death through disease of our loved ones; of this I am positive. The trouble with a great many of the cities is that they have too many men doing one man's work. The salary of the inspector, under the present conditions, would more than pay a good compensation to a man who is proficient and properly educated, and, in a very large majority of our cities, milk and meat inspection could be looked after by him. You bring this argument before one who has the power to act—he will tell you all sorts of good things, says "yes, it must and will be done," but when the budget is made out, you will see your efforts to check death and disease has vanished. Go to see him, he will tell you that the people will not stand for the expense. Now, how ridiculous on the face of it, when we know that it is all politics. Money spent under the present law is money wasted, so far as meat and milk inspection is concerned. It costs money to run a city, but put it where the best results will be forthcoming, then the voters will not find fault. To prove what I have said is true, let the executive head of a city take the trouble to look up the statistics of that city (one that is progressive enough to employ veterinary inspectors) and see what the death record is. There are a few cities in this state that can show results obtained. Many times the state of

death has not fallen in his (that is, the city official's) household, or else he has no conscience. He hears of a case of serious illness, resulting in death, due to some diseased condition of an animal, that was transmitted to some unfortunate person. At the time he thinks of it, but soon it passes out of his mind. To him it is only one more added to that awful death record, resulting from preventable diseases that have been contracted by eating or drinking food uninspected. We have no right to play with human life. "Prevention is better than a cure." Our laws in regard to inspection are not rigid enough. The one object of a community ought to be the bettering of the health of its people. If as much attention was paid to obtaining proficient sanitary laws as is given to the subject of criminal laws, our cemeteries would not be so crowded.

I am in no position to say what percentage of death the human race is subjected to, due to improper inspection; but I am sure it would be appalling. Death records show, many persons expire, "causes unknown." Some of these cases, no doubt, are due to infected food or water, and as these two absolutely necessary articles of life come from the rural districts, that is the place to commence to enforce proper sanitary laws. And as there are so many diseases of animals that are transmissible to man, and a very large majority of them are controllable, I say, without fear of contradiction, that the qualified veterinarian of to-day is the most competent man to cope with this serious situation.

The veterinarians are not consulted often enough by our municipal officials in regard to the conditions of health. Their advice has been ignored, but, mark me, their presence is bound to be felt in the near future. To-day they are on equal footing with the physicians who have been trying to officiate in the capacity of veterinary sanitarians in many places; and how few have made good or accomplished anything in this line of work. Why? Because the physician is out of his sphere. All that is necessary is to establish proper legislation; give the veterinarian the power of the law to back up his advice on matters of sanitation, and the result would be less fat graveyards.

If our legislative chambers were filled with men, who could be free to act according to their honest belief, instead of by dictation or command, what a pleasure it would be. Then men would enter politics with energy and zeal, and valuable laws would be forthcoming. It can be done, has been done and will be done.

It is sufficient to say that from the days of antiquity, law-makers and law-givers have recognized how important it was, to keep the clean from the unclean, and throughout history we find more or less reference to sanitary legislation, which only too frequently was imperfect in the extreme, because based on miserably crude notions as to the nature and causes of disease. And right here I want to give an example of this. In years gone by, the horse doctor, as he was then called, would receive a call to see a sick horse suffering from pain. He would diagnose the case as bots, and prescribe. The first thing that he would do would be to cut a small portion of the hair of the said horse's tail off, chop it up as fine as possible, mix that with sweetened water, then pour this mixture down his throat. Now what was his theory? This sweetened mass would pass into the stomach, the bots would partake of it, then those fine pieces of hair would get into their mouths, that would cause pain, and they would stop biting the walls of the stomach. When that took place, relief came, a cure followed. I could go on and mention a great many such crude and inhumane methods. I think that matters were much worse in cattle practice; but, as I have said, thanks to education for the elimination of such vile practices and the elevation of our profession to its standard of to-day. And is it to be wondered at why the horse and cow doctor were held in such low estimation by the thinking community?

I am sorry to say that many of our municipalities are working just along these lines, no advancement accomplished. The only thing to do is to bring the powers of the law to our aid and apply the knowledge of the man of science to the end that those slack methods in vogue can be checked. When the laws are passed, then the great object will be to secure intelligent co-

operation to carry them into effect, and that can only be done by securing the services of those who are competent to act. Individual initiative; the one who can do the right thing at the right time without being told. The idea of such work is to make the public, and more especially those immediately concerned, understand that sanitary legislation is not meant to be oppressive and harassing, but is founded on the highest motives and based on the most reliable knowledge obtainable. Its object being to preserve and protect the domestic animals from disease, and to act as guardians to the public health interests, to the end that contagious diseases would be nearly unknown, or more easily and promptly suppressed.

I am looking forward to great changes in live-stock raising in the eastern states; and with the scarcity of steers in the west, which is brought about by the great ranches being utilized for agricultural purposes, it will become a profitable business for the eastern farmers to go back to the methods of our forefathers, and raise a few cattle for the market each year. In this country, in the last six years, our population has increased 29,000,000 and our live stock has decreased 150,000,000. That is a very serious proposition. Now, according to those figures we can see that we are not raising enough live stock. And it is certain that the meat cost of living will not be reduced much, as the countries that now have a surplus of stock in time will be the same as we are. They must take care of their present trade, before they can take on such a meat-hungry country as this. So I fear this importation of meat will give only temporary relief. I believe that this country is capable of producing food enough for this population. The only thing is, the producers have not managed their affairs properly. The farmer of to-day, the king of all professions, knows that farms without cattle on them are the farms that are becoming exhausted, so they are going more into stock raising, as they need the fertilizing for the farm, that is produced by the live stock. And with the increase of cattle and other live stock local abattoirs will be established, and these will need to be looked after in a sanitary way. The result will

be that a proficient state meat inspection law, similar to our federal law, would be established. One thing will lead to another. I firmly believe that our agricultural law will be so amended or a live-stock sanitary board will be established in various states, the object of which will be to look after the sanitary conditions of the rural districts.

That would necessitate the subdivision of a state into districts, and each territory would be in charge of a veterinarian who would be held responsible for its sanitary conditions; and he, of course, will be under the state veterinarian. This veterinarian should devote his whole time to this work and receive a compensation sufficient to do it. He should devote some of his time to educating the producer, being a recognized authority, so to speak, on live-stock interests. When this condition takes place as suggested, the department, which this veterinarian is employed by or is acting for, will be in close touch with the live-stock interests, and the saving to the state will be enormous. Not only to the live-stock interest, but to humanity also. Many oubreaks of contagious diseases would be nipped in the bud and checked, especially those diseases known as germ carriers. Convalescents go to the country to repair their health, and unconsciously start a chain of infection, through the milk and water. Just as happened in New York City recently. The east-side typhoid outbreak. This was traced to a farm. The patient, a typhoid convalescent, not being cautioned, was careless and infected the milk that was sent to the city from this farm, the result being many cases, and some deaths occurred. My theory would be, a case of snatching the community from the jaws of death which, under the present situation, they are striving to enter.

The trouble with the American race is that they see serious things too late. Some calamity must take place before any serious thought is given, but when that takes place, immediately something is done. If it were possible that the death of individuals could be placed at the door of the objectionable ones of the human race, we would look at this in a less serious light;

but unfortunately this is not the case. So I believe the thing to do is to lock the door before the horse is stolen. I think that the time has arrived to prevent the unnecessary loss of life, and we as veterinarians should lend our knowledge to the thinking community, to consider this serious situation, and ask themselves whether it is not time for action, to demand from the authorities that the food and water that they partake of, to sustain life, be more scientifically inspected. With the aid of the press, results will be forthcoming.

AN EXPRESSION OF APPRECIATION.—An Ohio subscriber gives the following expression of opinion of an article by our esteemed collaborator, Dr. John F. De Vine, which appeared in our December number, beginning on page 350. "I wish to heartily congratulate you for your able paper on page 350, AMERICAN VETERINARY REVIEW. I have read a great amount of veterinary literature in 25 years, but I must say yours is the best on the subject. So splendidly readable, your language so simple, plain and sensible that it holds one's attention to the last word. I must say I thank you."

FROM DR. C. D. MCMURDO, Fort Ethan Allen, we have the following items of news of army veterinarians: "I am about to leave this station and accompany my regiment to Fort Huachuca. Drs. Lusk and English will come here with the Second Cavalry. Dr. Kron sails for Manila in January to join the Seventh Cavalry, and Dr. Van Allstyne of that regiment takes his place in the Tenth. Things look very propitious for the success of the army bill next session, thanks to all our good friends who are giving us such a strong helping hand.

We sail on the "Kilpatrick" from New York to Galveston and will then go by rail to Huachuca, if we don't wind up in Mexico."

A VERMONT SUBSCRIBER, in renewing his subscription to the REVIEW, writes: "I take great pleasure in reading it every month, and look forward to its coming. I also appreciate your great effort in producing the *best* veterinary journal published."

LAMENESS OF THE HIP JOINT.*

By David W. Cochran, D.V.S., New York, N. Y.

The hip joint is formed by the articulation of the femur with the os innominata. It is an enarthrodial articulation, an articulation which permits the most extensive and varied movements. Every movement of the hip is the act of contraction of one or more of the muscles of the part, which, as they act on the boney levers, cause the movements of flexion, extension, abduction, adduction, rotation or circumduction. Flexion is freer than extension. Of the lateral movements, abduction is the freest, unless flexion be combined with adduction, so that one limb passes in front of the other, while circumduction is much less free in the hips than in the shoulder. It is the rapid alternations of these movements which produce the different positions and various gaits of the animal, and it is their derangement from normal conditions, no matter from what cause, which constitutes the pathology of lameness.

Lameness may be defined as any irregularity or derangement of the function of locomotion, affecting one or more extremities involving the inability of the patient (according to the extent of the injury) to sustain the body weight, due to pain from disease or injury to muscular or nervous structure, disease of synovial capsules, softening and disintegration of ligaments, ulceration of cartilege, necrosis of bone. We may classify lameness under two headings: One a swinging leg lameness, and the other a supporting leg lameness. Under the first heading will be disordered condition of muscular tissue under the second, those which support the body weight, namely hoof ailments,

* Presented to the fiftieth anniversary meeting of the American Veterinary Medical Association, at New York, September, 1913.

rupture of tendons, luxations, fractures, synovial dilatations (either thecal or bursal), nerve lesions. To summarize: In hip lameness we may have the joint proper as the seat of disease, also the ligaments, the tendons of the gluteal muscles and the muscles themselves, the bones comprising the os innominata as well as the greater and lesser trochanters of the femur.

Under this heading of swinging leg lameness we will consider sprain. In defining sprain we may say it is the wrenching of the structures which form a joint in which we have more or less laceration or stretching of muscular fibre, tendons or the sheaths surrounding or supporting them. It is probable that there is in every case of severe sprain more or less injury inflicted upon the parts in the immediate relation of the affected joint. The muscles and tendons must necessarily participate in the wrench. Ginglymoid or hinge joints suffer more than orbicular joints. Orbicular joints possess more latitude and freedom of motion. There is an essential difference in the structure of the ligaments themselves in the two classes of joints. In orbicular joints the connecting media are of a fibrous nature, comparatively thin, yielding and extensible. In the ginglymoid, the ligaments are extremely firm and indisposed to stretch, or when strained are incapable of withstanding rupture of their fibres.

The causes which are likely to result in sprain of the hip are sliding or falling on the ground surface, when the hind legs are suddenly thrown into extreme abduction or any extreme effort accompanied by a powerful contraction which may cause laceration of the soft structures, due to loss of control on the part of the animal or held in forcible operative position, either by hobbles or stocks, or due to holding back or backing up a heavy load or a misstep followed by a powerful exertion of strength in preventing a fall. This is followed by inflammation and suspension of function. Muscles are liable to wounds and lacerations, inflammation, atrophy and hypertrophy. Laceration (rupture of muscles) is often produced from slight injuries. The place where the rupture occurs is near the junction of the fleshy fibres

with their tendons. Occasionally a muscle may give way at its middle or, in fact, at almost any portion of its extent. The laceration is sometimes limited to a few fibres; at other times it involves the entire thickness of a muscle and its aponeurotic sheath. Finally cases occur in which a number of muscles are ruptured. This is, as has been stated, the result of some violent bodily exertion. Temporary lameness and inability to move about for some time are generally the only serious consequences to be apprehended until the reunion of the torn structures will be sufficiently firm to justify their accustomed use.

In inflammation of muscles the sheaths of the muscles very frequently, if not generally, participate in the morbid action. One effect of inflammation of the muscles and their fibrous envelopes is contraction of their fleshy fibres, leading to marked disorder of their function. We may have atrophy of muscles, caused by defective circulation, inactivity, or whatever has a tendency to impair the function of innervation, retard or diminish the supply of blood or induce inactivity in a muscle.

When contusion is severe, we may have a paralysis, due reflexly to injury of the articular terminal fibres of the obdurator or branches of the sacral, or directly from contusion of the sciatic as it passes behind the trochanter. The muscular spasm may be reflex, and a sufficient cause is found if we suppose the nerve terminals are injured. We have often associated with hip lameness symptoms of stifle lameness through contiguity of structure.

Wounds of tendons, when divided subcutaneously, readily unite through the intervention of plastic matter without the occurrence of any considerable degree of inflammation. There are many conditions in which not only the muscular and tendinous structures are affected by sprain, but by contiguity of parts the supplemental structures may be involved with complications, as periostitis or callouses. The true seat of pathological lesions are often uncertain, owing to the massive structure of the parts.

Under the heading of the second division I will mention luxa-

tions of the hip. I have never had any in my practice, nor have I ever seen one in the horse, although cases are on record where the accumulation of synovia was so marked that the femur would slip out of the cotyloid cavity. The diagnosis of this condition would be difficult and would only interest the pathologist and not the practitioner. It would seem almost impossible to have luxation of the coxo-femoral joint, from the way the joint is held in position by ligamentous structure.

Under the heading of fractures I beg to say that in looking over several works on human surgery I found very little mention of fracture of the pelvis, but there are volumes written on fractures of the femur; for the human pelvis is stronger, more dense and compact in proportion to its relative size than in any other animal. Accidents to the human being in the pelvis are generally the results of railroad accidents, or they have been run over by a heavy vehicle. Not so with the horse. We have more fractures of the pelvis than the femur. In the coxal region we have the union of three pairs of bones, the illeum, the ischium and the pubis, forming the whole of the pelvis. Fractures in these bones are caused by external violence and may involve the illeum, the ischium and the pubis, the cotyloid cavity or several of these parts together. The illeum is frequently injured at its antero-external angle. Sometimes a single tuberosity is broken off and remains attached to the bone; crepitation is hardly perceptible. Sometimes it is completely loose and is more or less drawn downward by the contraction of muscular tissue. There is generally no crepitation discernible, but there is a noticeable loss of symmetry in the appearance of both sides. The lameness is a peculiar one. One of the earlier symptoms is a sideway progression, due to a slight curvature of the spinal column. This, in turn, is caused by a loss of contractability of the illeospinalis muscle, due to the fracture of the attachments of this muscle at the angle of the illeum.

Secondly, the ischium. Fracture of the ischium is also the result of external violence, but I think most cases of this kind are the result of powerful muscular contractions. I have seen

several cases in cart horses that were compelled to back up heavy loads. There is a peculiar deformity of the croup, a flattening at the height of the ischial tuberosity, an abnormal projection on a level with the articulation of the hip. The gluteal region is larger and more prominent. The prominence is the result of a luxation forward of the posterior portion of the long vastus. While forward motion is limited, progression backward is almost impossible.

Thirdly, the pubis. We have fractures at the symphysis pubis. This is due to falls. The diagnosis is made by rectal exploration, together with manipulation of the leg by an assistant in all the varied movements of the hip to detect crepitation.

We have three other fractures which are of a more serious nature; those in the vicinity of the cotyloid cavity: one of the neck or shaft of the illeum; second, surrounding the obdurator foramen; and third, of the cotyloid cavity. When the fracture has taken place anterior to the cotyloid cavity, beside the lameness, there is a shortening of the step forward, the foot resting on the ground surface firm. If it is posterior of the cotyloid cavity, there is pain and stiffness while resting; forward motion is limited; backward motion is positively restricted. When at the cotyloid cavity, the pain is intense and lameness severe. It is generally complicated with arthritis. There is no flexion at the hip.

While I have confined myself to the pelvis, I might say that there are two fractures of the femur met with, those of the greater and lesser trochanter.

Every variety of complication, including muscular laceration, the formation of deep abscesses and injuries to the organs in the pelvic cavity, the bladder, the rectum, the uterus, may be associated with fractures of the hip. Fractures in and near the cotyloid cavity may cause disability of the patient, as when the reparative process has left boney deposits in the pelvic cavity at the seat of union, which may induce local paralysis by pressure on the nerves that govern the muscles of the hind leg. This is a condition which is seen when callouses have been formed at

the floor of the pelvis near the obturator foramen, pressing upon the course or involving the obturator nerve.

Treatment: In cases of sprain the treatment will depend on the severity of the case. Hot-water applications and hot packs, stimulating liniments, vessicants, setons, the actual cautery, either superficial cautery or subcutaneous cautery, inter-muscular injections of normal salt solution, tincture of iodine, spirits of turpentine. For fractures, place the animal in slings to prevent motion as far as possible.

MULE BREAKS VETERINARIAN'S ARM.—Dr. A. O. Kennedy, Columbia, Tennessee, recently sustained a fracture of the left radius from the kick of a mule. We are glad to be able to report Dr. Kennedy now convalescent.

SCRATCH, DOCTOR GOT IN WORK, PROVES FATAL.—Fort Smith, Ark., October 17: Dr. H. A. Fry, Assistant State Veterinarian, and widely known throughout Arkansas, died Tuesday from blood poison, the result of a scratch sustained a week ago while operating on a horse.—(Clipped from *Arkansas daily.*)

THE VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY will hold its annual meeting at the Hotel Windsor, Trenton, N. J., on Thursday, January 8, 1914. Secretary Loblein extends the usual cordial invitation to the many friends of the organization in the neighboring States.

ENTERS THE REALM OF GENERAL PRACTICE.—Dr. H. O. Moore, of Westfield, Indiana, has become associated with Dr. Edgar Heiny, Hattiesville, Miss., in general practice. We congratulate Dr. Moore in having embraced the practice of veterinary medicine, which holds so much of interest for those engaged in it, and congratulate Dr. Heiny in having Dr. Moore associated with him.

PROMINENT VETERINARIAN BECOMES SECRETARY OF CATTLEMEN'S ASSOCIATION.—Dr. Tait Butler, editor of the *Progressive Farmer*, an active worker in the A. V. M. A., and known to veterinarians all over the United States, was elected secretary of the Southern Cattlemen's Association, at their recent meeting in Memphis, Tenn.

REPORTS OF CASES.

AN OUTBREAK OF TUBERCULOSIS IN PIGEONS.*

By F. S. Jones, New York City.

In the early part of June a live pigeon was brought to the laboratory for diagnosis. The owner stated that the bird with some others was suffering with nodules on the wing, which he thought might be cancers.

The bird was a female, five or six years old, of a fancy breed and had been ill some time. Depression was not noted. The eyes were bright, and emaciation was not apparent. The appetite was good. At the humeral radial articulations of both wings and on the tarsal joints of the legs were large irregular swellings.

The pigeon was chloroformed and a careful post-mortem examination made. The following facts were noted at that time: The bird is in good flesh.

At the humeral radial joint there is a large, irregular, lobulated swelling, involving both the external and internal aspect. It measures 4.5 cm. long by 3.5 cm. wide by 2.5 cm. thick. The external surface is perforated by a large opening 2 cm. in diameter. Protruding from this is a plug of caseous material. There is a smaller opening on the external aspect. On cutting into the nodule it is found to be made of yellowish-white caseous material, having a disagreeable odor. The lesion not only involves the subcutaneous tissue, but the tissue surrounding the joints and the bones. The right wing and both tarsal joints of the legs are affected, the pathological processes have not advanced as far as those in the wings.

The heart, liver, spleen, lungs, kidneys and ovaries are apparently normal. There are two small, round, yellowish-white tubercles in the pancreas. Over the serosas of the intestines are

* This observation was made in the laboratory of the Department of Comparative Pathology and Bacteriology of the New York State Veterinary College, at Cornell University, Ithaca, N. Y.

scattered a few small round nodules. One large irregular, yellow nodule is present in the mesentery.

Properly stained smears made from the caseous material of the wing and mesentery revealed the presence of large numbers of "*Bact. tuberculosis.*" The organisms were long, slender and beaded.

At the request of the writer two other pigeons were brought to the laboratory. They were chloroformed and examined.

Number 2. A female between three and four years old. The bird is in good flesh, depression not noted. On the right wing at the carpal joint is round, raised swelling, fifteen millimetres in diameter. The inner surface is perforated with a large round opening, plugged with necrotic tissue covered with a thick scab. The body of the nodule is made up of yellow caseous material. The bones are not involved.

Careful examination of the other joints and the internal organs fails to show that they are affected. "*Bact. tuberculosis*" demonstrated in smears from caseous material.

Number 3. Male between five and six years of age. The bird is emaciated. Weakness is marked, respirations somewhat difficult, but the appetite is good.

Right wing: At the humeral radial joint is one small nodule three millimeters in diameter. Beginning at the lower end of the ulna and involving the carpal joint, and extending to the lower ends of the large and small metacarpals, are a series of confluent tubercles. The whole mass is 4 cm. long by 2 cm. wide and varies in thickness from 1 to 1.5 cm. On the surface are three small openings plugged with caseous material.

The lower end of the humerous is badly necrosed. Caseous material has replaced the bone. On the ulno-radial articulation there is an irregular tubercle having a diameter of 6 mm. and a depth of 4 mm. The bone marrow is necrotic.

The posterior half of the right lung contains one large round yellowish-white tubercle. The nodule measures 1 cm. in diameter. It is composed of yellow caseous material surrounded by a fibrous capsule.

Smears from the necrotic material of the wings and lung, when stained for tubercle, revealed the presence of the specific organisms in large numbers.

Tubercles were not found in any of the other organs. Inoculations from the caseous material upon glycerine agar were incubated at 37.5 degrees C. for 30 days. At the end of that time tiny round greyish white colonies were visible. Smears were

made from these and stained in hot carbol fuchsin, and treated with acidulated alcohol, failed to discolorize the organisms.*

Pieces of the various pathological tissues were fixed in Zenker's and sectioned.

Fig. 1.

Fig. 3.

Fig. 2

Figure 1. Tubercles on wing of pigeon No. 1 x 1.
Figure 2. Tubercles on leg of pigeon No. 1 x 1.
Figure 3. "Bact. Tuberculosis" in smear from lung of pigeon No. 3 x 750.

The microscopic lesion is typical of avian tubercle. The nodule consists of a necrotic centre surrounded by a row of giant

* In the 28th Annual Report of the Bureau of Animal Industry, U. S. Department of Agriculture, 1911, pages 64-65, a "lumpy" or nodular disease of pigeons is briefly described. The malady is apparently characterized by the formation of subcutaneous caseous nodules involving the heads, necks and wings of pigeons. The etiological agent seems to be a rod-shaped organism having some resemblance to "Bact. tuberculosis." It resists decolorization with mineral acids, but is decolorized by acidulated alcohol.

cells. Surrounding the giant cells is a thin connective tissue capsule containing epithelioid cells. The outermost layer is comprised of lymphoid cells and polymorphonuclear leucocytes. The lesion in the wing is made up of a large caseous deposit in the subcutaneous tissue. The skin is generally normal, except where the processes have extended directly through it, causing a perforation. The lesion in the intestine involves principally the serous and muscular layers.

In properly stained preparations the causative organism is found to be in the necrotic material in large numbers.

The owner was advised of our findings and informed us that within the last six months nine cases of the disease had appeared. Three birds became badly affected at various times during the winter. As soon as a case was noted it was isolated. The disease progressed slowly in all three birds, but finally the whole side became involved, and it was decided to chloroform them. Up to this time six other birds have become affected. Three of them are well advanced, but the others have developed recently. All of the birds revealed the nodules on the wings.

A clear record of how the disease gained entrance into the flock is lacking. A large number of birds are exhibited at the various poultry shows every year. Less than two years ago a pair of highly bred birds were purchased for breeding purposes. Several months after their introduction the female died of some unknown disease. The owner was inclined to believe that this bird brought tuberculosis into the flock.

The owner was advised to slaughter all pigeons showing nodules on the wings or any birds that were emaciated. The birds were valuable, and he was desirous of perpetuating the various strains. It was suggested that the house be divided and separate yards constructed. One part to be used only for young stock hatched from the eggs of selected individuals and the other side used for regular flock. Thorough disinfection of the houses and coops and the liming of the yards were urged. The suggestion was made that he mate the birds as usual. As soon as the eggs were layed, they were to be removed from the mother and dipped in alcohol and incubated under a common pigeon obtained from a healthy flock and reared in the other side of the coop. In this way it is hoped that a flock of sound birds may be raised, and the original birds in which the disease is known to exist, may be disposed of.

LYMPHO-SARCOMA IN THE DOG.

By A. Slawson, D.V.M., New York, N. Y.

This paper presents in full a single case of lympho-sarcoma in the dog and is not a treatise on this disease, as the title might imply. However, a few general remarks on the subject may not be out of place, in bringing to your notice the case in question.

Lympho-sarcomata are claimed by many to be found only on the external, visible, genital organs, viz., on the vaginal walls, vulva and perineum of the bitch and on the mucous membrane of the prepuce and penis of the dog, especially at the base of the penis. They are infectious, being transmitted from one sex to the other during the act of coition. While some investigators were at first inclined to pronounce these growths lesions of a venereal disease, similar to those of syphilis in man, no spirochaete has been demonstrated. The general appearance of the external forms of this cancer is granulomatous, varying in size from a pinhead to a hazelnut and larger. There may be one granuloma or several, which, as they enlarge, may become confluent, forming a spreading growth. The larger growths are often spongy in consistency and bleed easily. It is probable, owing to the friable nature of the external forms of these lympho-sarcomata, that they are transmitted because of the physical strain to which the genital organs of canines are subjected during couplation. On this account it would seem that these cancers are infectious in a pathological and not in a bacteriological sense. Since they follow the usual course of malignant growths in being metastatic, it is justifiable to believe that metastasis occurs during sexual intercourse, when the organs of couplation being engorged with blood and under considerable pressure, conditions are favorable for such transmission.

In the case now to be described it is interesting and important to note that lympho-sarcomata may exist internally quite independently of any external manifestation of the disease and in animals where sexual intercourse has not taken place.

History: The patient, a Maltese terrier dog, one year old, had been ailing about four weeks. He began losing weight, grew perceptibly weaker, urinated infrequently—the urine having a very yellow color and strong odor—and occasionally passed a little blood with the stools. He had not at any time been used for stud purposes. His appetite was fair throughout his illness.

Symptoms: Pulse 110. Temperature 101. Great prostration. Rectal examination revealed large mass near right kidney.

Catheterization yielded little urine, but showed the urethra to be unobstructed. The mucous membrane of the prepuce and penis were normal. Palpation of the abdominal walls revealed a firm mass in the abdominal cavity.

Diagnosis: The tumor was pronounced a malignant growth, which involved the right kidney and possibly the bladder. The prognosis was given as unfavorable.

Treatment: With the owner's consent an exploratory operation was decided on, but it was agreed, if the case proved hopeless, that the dog should not be allowed to come out of the anesthetic.

After the usual surgical precautions had been carried out a laporotomy was performed. Through the abdominal opening a large growth was seen that involved the kidneys and was adherent to the mesentery which was also affected. The growth being inoperable, the dog was not permitted to recover from the anesthetic.

Autopsy: The left kidney was cystic, the capsule and part of the cortex only remaining, the medulla having been destroyed The parenchyma of the right kidney, although abnormal in appearance on cut surface, proved normal on microscopical examination. The growth, beginning in the pelvis of the right kidney, involved also the left kidney, and adhered to the mesentery, whose lymph glands were enlarged. The entire growth being about four inches long, three inches wide and two inches thick, had a nodular appearance. Microscopical examination of the tumor showed it to be a lympho-sarcoma, the diagnosis being made by Dr. Jas. Ewing, of the Cornell Medical College. The sub-lumbar, sub-sacral, bronchial and inferior cervical lymph glands were enlarged.

Conclusions: The foregoing case shows that lympho-sarcomata may occur independently of any lesions of the external genital organs and without the act of copulation having been performed. In Dr. Ewing's opinion, lympho-sarcomata may occur as primary growths, not necessarily involving the external genital organs. They have been found in the skin and there is a specimen in the museum of the Cornell Medical College of lympho-sarcoma of the walls of a dog's uterus, which resembles in its external nodular appearance the growth now before you.* Beebe and Ewing, in 1908, published a paper of their work on this disease. They found it transmissible by coitus

* Preserved specimen shown.

and on transplantation metastatic growths appeared. Pieces of the tumor from this case were transplanted into other dogs, with negative results. It is probable, according to Dr. Beebe, that the tumor was too far advanced, the best results being obtained in the earlier stages of these growths.

RIGID OS UTERI IN A COW.

By S. J. ALCALAY, D.V.M., Cottonwood, Minn.

Dear Editor—I consider the REVIEW as a meeting place where the savant and the beginner, the professor and the student meet together, the former to instruct and guide and the latter to question or discuss. Or, as the French saying goes, "*Et du choc des idées jaillit la lumière*" (a spark comes out from concussion of ideas).

The case I want to submit to the profession through the columns of the REVIEW is as follows:

Quite a progressive farmer came to town Sunday and said: "My cow has been calving for awhile and I fail to see her expulse her calf. I wish you to come and try your ability." I went and on exploration I found that the os uteri was so much contracted that hardly the first and the second fingers could penetrate through. I explained the farmer what we were up against (just to follow Dr. John McNeil's advice, "Always explain the farmer—and in the presence of a third party—what there is to do.") The cow was strong and young and by palpation I located the head, and over it made an incision. After this I made an opening for the full hand, straightened up the legs which fortunately were the front ones. I tried to keep cool and directed my hand so gently as to cause the least injury to the mother and the little one. After manipulation I brought limbs and head to a normal presentation. After a short traction we had the little fellow out, to the greatest happy surprise of the farmer and not with a small satisfaction to the operator who had been working for over two hours. But the cow made it disagreeable enough, as at every five minutes she would evacuate feces over the operator's arms. This would necessitate the cleansing of the genital overtures oftener. This was done with a smile, as losing patience in a critical case, such as this, would mean a loss

to the farmer, and the principle of the writer has been to always be honest in the work and sincere in talk.

The farmer was so pleased that he thanked me very much for the work and was very willing to advertise it in the local paper, and this from his own will.

Undoubtedly many a brother veterinarian has had cases like this. What I want to emphasize is the good results obtained by keeping cool; the success of the operation and also the great resistance of a cow for such an operation. I am glad to report that the cow and the youngster are doing very nicely, it being the fifth day at this writing.

AZOTURIA CASE IN RAIN.

By Jos. J. Smith, D.V.S., Beaverton, Oregon.

Had a case of azoturia on the road, in a rainstorm. Treated with stimulants, and externally plenty of hot water and blankets, and managed to keep the horse on his feet. He was able to walk home in the morning.

I treat a great many azoturia cases on this line of treatment, and do not lose many. When they get down it sometimes takes two or three days of treatment and careful nursing before they get up.

AN ANTHRAX OUTBREAK—VACCINATION DOUBLE METHOD.

By Grover V. Love, M.D.V., Chalmers, Indiana.

On September 19 last I was called to a large cattle ranch to see a herd of 70 two and three-year-old steers that were dying without showing any symptoms of sickness, according to the owner and attendants. I found the cattle grazing on very low, swampy land. The owner informed me that in former years he had suffered heavy losses in the same pasture from symptomatic anthrax or blackleg, but as these cattle had been recently vaccinated for blackleg, he was at sea to know what could be wrong. After careful post mortems, also microscopical examination of tissues and blood, and guinea-pig tests, a diagnosis of malignant anthrax was made.

The herd was quarantined at once, and I began vaccinating with the double method of anthrax vaccine. The loss before vaccination was eighteen steers and two horses; the loss after vaccination was two steers and no horses.

I state the above because as far as I can find out this is the first outbreak of this disease in Indiana. If this is not the first in this state, I would like to know when and where the others occurred.

The diseased herd are doing nicely at present. I have vaccinated 300 head in the infected district lately with no loss.

GLANDERS.

The above picture shows twenty-eight head of horses destroyed, with glanders, at Eden Valley Ranch, Hearst, Mendocino County, California, by Deputy State Veterinarian Dr. A. Asbill, of Sacramento, and Dr. H. Bergh, of Suisun, California; the latter acting as veterinarian to the owner of the horses. It is a sad picture, but there is but one thing to do with a glandered horse; just what the California veterinarians have done with these.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Paralysis of the Internal Popliteal Nerve in Cattle [*R. H. Smith, M.R.C.V.S.*].—Frequently observed by the author in dairy cows, more frequently subsequent to parturition.

While standing, the animal can place little or no weight on the leg and the digits are held in a state of plantar flexion. Hock cannot be extended, but with each forward step it is over-extended, so that the foot is jerked upwards and forwards with the digits flexed backwards and the anterior surface of the fetlock finally comes to the ground. Recovery takes place spontaneously in about 75 per cent. of the cases. In other cases the animal lies from one to several weeks and when rising shows great muscular atrophy of the thigh. There seems to be no pain. Animal loses flesh rapidly. Treatment has seemed to be of no avail. The cause of the trouble is obscure, perhaps deficient blood supply from embolism.—(*Vet. Journ.*)

Intussusception in a Bullock [*W. D. Lindsay, M.R.C.V.S.*].—Yearling bullock in thriving condition was disinclined to eat and has tympany of the rumen.

Laxative treatment gives no result.

The animal was kept for three days and finally slaughtered. At the post mortem a very interesting intussusception was discovered. It measured 11 inches in length.—(*Ibid.*)

Parasitic Cyst in the Brain of a Heifer [*H. A. Reid, F.R.C.V.S.-D.V.H.*].—Six months previously the animal was noticed to present certain abnormal symptoms, more or less erratic movements, tendency to incline the head to one side. No real definite cause was made out. Later the manifestations grew more marked. Heifer walked in circles, eyesight defective, loss of condition. No bulging or softening of the cranial bones was present. No pain on pressure over the region. Cystic brain

growth was diagnosed and the post mortem revealed a hydatic cyst occupying the right lateral ventricle, with its wall composed of greyish white fibrous tissue and studded with yellow granular material. The cyst was about the size of a goose egg.—(*Ibid.*)

WASP STING [*T. G. Palgrave, M.R.C.V.S.*].—Large female tabby cat was stung by a wasp. When stung she behaved as though in a fit, rushing about wildly, running round, mewing and finally collapsed. She breathes hurriedly and irregularly. pulse is rapid almost imperceptible, pupils greatly dilated, muscular twitchings all over, animal in pain, cries pitifully but faintly Chloral was given to allay pain and followed by aromatic spirit of ammonia. This had a good effect, which lasted for an hour or so when she was taken with a new set of symptoms.

Apparently no pain, respiration slow and deep, weak hindquarters, loss of control of hind muscles, cold body and limbs, pupils less dilated, pulse fuller and regular, temperature 99.8 degrees Fahrenheit. She staggered about the room. Inhalation of medicinal liq. ammonia, French brandy. She slept then and gradually recovered.—(*Ibid.*)

POISONING BY BARIUM NITRATE [*W. J. Moody, F.R.C.V.S.*].—Valuable thoroughbred mare had a cough for which was prescribed 30 grams each of the powder of chlorate of potash, nitrate of potash and glycyrrhiza. She had two powders six hours apart, and was taken with violent colics and died before the arrival of the writer. Post mortem showed stomach quite normal, also first part of the duodenum, but small intestine is more or less in a venous congestion. One of the powders was the next day given to a colt. He had diarrhea for a week after. The prescription was then made up by another druggist and the new powders given to another colt with good results. The powders made up by the first druggist were analysed and found to contain 30 grams of nitrate of barium instead of the potassium. The analyses of the contents of the intestines of the mare revealed the presence of considerable quantities of barium. Suit for damages was the conclusion of the case.—(*Vet. Record.*)

AMPUTATION OF THE LIMB IN A COW [*Peter Meicle, M.R.C.V.S.*].—Ayrshire, grey, aged two years was found one morning with fracture of the off fore canon bone. The cow was operated on, the leg being put in splints with dry dressing until wound healed. Then about six weeks after an artificial limb was applied, consisting of two iron splints attached to a round piece

of wood below, and to the limb below the elbow by a broad band of leather which was laced tightly. The stump of the leg was inserted into a leather pocket resting on a felt pad. The cow uses her leg well, lies down and rises and can run with the rest of the cattle.—(*Vet. Rec.*)

ANTHRAX IN A HORSE [*Wm. J. Moody, F.R.C.V.S.*].—Grey mare, half bred, five years old, has been in good condition and worked well since purchased. One morning she was taken very ill with pains similar to colic. When the author arrived she had died. On opening the cadaver there was found a great amount of fluid in the abdominal and pleural cavities. The intestines were in an infiltrated condition, like one finds in the muscles of charbon symptomatic. Anthrax was suspected and confirmed by microscopic examination. There are no sanitary laws of Board of Agriculture or County Councils in Chili.

The sequel of this case was that the man who skinned the carcass got inoculated and had to have his arm amputated to save his life. The writer himself, nine days after, had pustules developed on his right wrist and arm and had to be freely cauterized with thermo and received injection of tincture of iodine at the rate of 40 a day. Good recovery was obtained only after three weeks of treatment.—(*Vet. Record.*)

ANEURISM IN A HIMALAYAN BEAR [*H. G. Ganouly, Bengal Vet. College*].—A young bear was presented to the college. He soon became quite tame and ran about.

He appeared comfortable and happy although was observed having fits and vomiting on occasion. After a while he died suddenly without having shown any immediate symptoms of ill health. At the autopsy the abdominal viscera were found very anaemic. In the thorax there were two bloody effusions and a large blackish clot of blood measuring 7 by 3 inches, and situated between the left lung and the costal wall. When this was removed two aneurisms of different forms and sizes were exposed. One, the largest, had ruptured and caused the escape of blood in the thorax. The lungs were collapsed and free from lesions. There was no parasitic infection of the internal tunic of the aortic arch, but degeneration and atheromatous condition. The heart was to all appearance healthy.—(*Journ. Comp. Pathol. & Therap.*)

GLANDERS IN MAN [*S. H. Gaiger, M.R.C.V.S.*].—Cases of this contagion are fortunately rather rare, and yet they occur

too often. The author has been the victim of the fearful disease and fortunately has escaped the usual termination. Infected in March, 1911, he passed through a horrid period of sufferings and of operations which did not end until June, 1913, when at the time of writing he felt that he had never been in better general health and believed he had made a complete recovery. Abscesses after abscesses, lymphatic troubles, incision of rebel fistulous tracts, removal of phalanges, amputation of one arm, a temporary loss of one ankle joint, which, without counting the smallest of the incisions, required forty-five surgical interferences, and of those twenty-seven under a general anesthetic tell of the various manifestations of the infestation and of the many complications following it. The treatments that were followed have varied of course with the condition and location of the lesions, poultices, hot applications, morphia as indicated, antiseptic applications, belladonna, boracic acid, vaccination, iodoform, peroxide of hydrogen, cyanide, iodine tincture, etc. During the whole disease, the temperature offered various records, reaching one day as high as 104 degrees Fahrenheit. Many cultures, inoculations and microscopic examinations had left no doubt as to the correctness of the diagnosis.

Written by the sufferer with all the minutiae of a scientific observer, the article is very instructive and sadly interesting.—(*Journ. of Compar. Pathol. & Therap.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Pulmonary Collapsus With Calcification in a Calf [*Martel.*]—A round mass as big as a child's head was found by a slaughtering boy in the abdominal cavity of a calf which he was dressing at the abattoir.

The mass was very hard, enveloped by a thick fibrous envelope and inside presented a certain number of fibrous bands, surrounding spaces invaded with calcareous deposits and forming a characteristic lobulation. At the histological examination the envelope of the tumor was formed of connective cells and numerous elastic fibres resembling the arrangement of the pleura. The interior was formed by numerous cavities more or less ramified, with epithelium like that of the bronchia. Between these there existed slits of various disposition, as if there had

been squeezed alveoli, as in collapsed lungs. Calcification was spread all over, but there were no bony bands.

Was that mass a pulmonary lobe which had passed through the diaphragm, presented all the characters of collapsus with chronic peribronchitis, then return to the condition of bronchial cells with diffuse calcification? The mass becoming then pedunculated and left free in the abdominal cavity.—(*Sanit. Report.*)

PHARYNGITIS—SUPPURATION OF THE MIDDLE CERVICAL LYMPH GLANDS—ULCERATIONS IN THE TRACHEA [*Mr. Janin and Fosse, Army Veterinarians*].—A nine-year-old bay horse is taken with pharyngitis and treated in the usual way. But the diseased manifestations seem to hang on him and the horse remains with marked dysphagia, dry and intermittent cough, mucous nasal discharge. One morning there is a diffuse swelling of the thyroid region. It is painless and not fluctuating. Explorating punctures are made. The swelling increases some but no suppuration is detected. The temperature has raised to 39 degrees C. Yet the animal appears lively, eats a little and does not seen inconvenienced by the peritracheal swelling. One morning he is unexpectedly found dead. At the post mortem the important lesions were in the pharyngeal and tracheal region, where a purulent collection elongated, ovoid, as big as an apple was found between the trachea and the muscle longus colli and extending from the 3d to the 8th tracheal ring.

It had ulcerated and by two openings emptied itself into the trachea, causing a fatal intoxication.—(*Journ. de Zootech.*)

HYPOSULPHIDE OF SODA IN DOG DISTEMPER [*Mr. Teppaz*].—The author first treated cases with intestinal form. The effect was so wonderful that he decided to use the same drug in a systematic manner for all cases, no matter what was the form, intestinal or pulmonary, and without the use of any other drug. In the beginning of the disease he gave first a purge of calomel and afterwards in milk or sugared water hyposulphide 0.6 to 1 gram, divided in 10 doses. One being given every day after the purge. Revulsion of the chest is also indicated when respiratory symptoms are present. Under that treatment the diarrhea of the gastro-intestinal form is soon subdued. The cough and expectoration of the respiratory trait diminish. The treatment can be renewed if necessary. For the author the treatment is to be recommended as having given him always very satisfactory results.—(*Rev. Gen. de Med. Vet.*)

SUB-ACUTE DIFFUSED MENINGO-ENCEPHALITIS IN A DOG [*MM. Royunet et Sellier*].—"If this affection in man seems to be a sequela of syphilis, in dogs it looks as if it followed distemper" This remark of Prof. Petit and Dr. Marchand is confirmed by the following case. Black cuniche has had distemper when 9 or 10 months old. A year and a half after he had a cutaneous vesiculo-papulous eruption and a gastro-enteritis. Since, he loses flesh gradually, he has paresia of the hind quarters, inco-ordination of movements, walks staggering with giving away of the legs. With the paraplegia, he begins to check his head, has dysphagia by paralysis of the tongue and lips. He loses his voice.

Notwithstanding strychnia, electricity, points of cauterization, the medullary paralysis progresses, the forelegs are affected. There are convulsions, strabismus, contractions of the eyelids, grinding of the teeth, hallucinations and finally death takes place about one year after the apparition of the first symptoms. Death occurred in coma.

At the autopsy and at the histological examination lesions characteristic of sub-acute diffused meningo-encephalitis were found.—(*Journ. de Zootech.*)

PECULIAR CASE OF CEREBRAL TUBERCULOSIS IN A STEER [*Mr. A. Rieussec*].—Five-year-old steer is taken suddenly with violent excitement—is absolutely furious, jumps here and there in his stall, tries to get up in his manger, he moans loudly, strikes with his horns on surrounding objects. These accesses of vertigo are followed with moments of quietness of short duration. Muscular twitchings take place on the shoulder and thigh. The general sensibility is abolished and the animal does not resent punishment of any kind. Full bleeding, mustard frictions, purgation, give some relief, and the animal is in a deep state of quietness. The next day a convulsive movement of the jaws is present, resembling those of rumination, but more rapid. Then appear troubles of motion. The digestive apparatus is involved, prehension of food is impossible, and deglutition slow. Death takes place on the fifth day. Post mortem examination revealed lesions of generalized thoracia and abdominal tuberculosis and one tuberculous mass in the right cerebral hemisphere and several small ones on the false cerebri. The tubercles were yellow and caseous.—(*Revue Veter.*)

DIVERTICULUM OF FLOATING COLON CAUSES FATAL OBSTRUCTION IN A HORSE [*MM. Moulis and Salmare*].—Eight-

year-old gelding has colic; not severe. Treated with eserine, pilocarpine, etc., he remains the same for two days, although he has passed no feces. Arecoline is given, also castor oil without result. The horse is no better, lays carefully down, sits on his haunches, as dogs do. As no improvement appears, the owner decides to send him to the butcher. At the dressing of the carcass, on opening the abdomen a strangulation of the small colon is discovered. It was due to a diverticulum, finger glove in shape, situated near the end of the colon. It was continued with the intestine by a small cord, ten centimeters long, which had formed a loop around the colon, which had then become a complete obstacle to the exit of the feces. Rectal examination had not been made, and, if it had, probably the nature of the trouble might have been detected, although relief could not have been given.—(*Rev. Vet.*)

APPENDIX AND APPENDICITIS IN A SMALL MULE [*Mr. Belille-Betat*].—Forty-eight hours old, he has had colic for twelve hours. He was born at term, was well the first day. He died a few minutes after the author arrived.

No lesions to explain the colic were found except marked congestion of the cæcum. At the point of this organ there is a cylindrical appendix, rounded at its end. slightly curved and having the size and form of the index. It is a simple diverticulum of the cæcum, with which it corresponds and its cavity is filled with reddish, putty-like meconium. It is evident that the little fellow died with appendicitis.—(*Ibid*).

POLYCYSTIC AFFECTION OF THE LIVER IN A BOVINE [*Mr. L. Cauchemez*].—These lesions were found at the abattoir when the animal was slaughtered. His liver weighed 40 kilograms (about 80 pounds). Its surface was extremely bosselated and presented in its thickness a very large number of cysts of various sizes from the head of a pin to that of a foetal head. They were not cysts of echinococci, but were monolocular containing fluid, whitish or rosy or dark brown. There were no indications of degenerated parasite. It was a simple polycystic affection of the liver, whose structure showed a marked sclerosis all through the organ.—(*Hygien. de la Viande et du Lait*).

GROWS BETTER ALL THE TIME.—An Ohio subscriber, in renewing his subscription writes: "Every number of this valuable journal grows better, and I would not like to be without it in my practice."

CORRESPONDENCE.

ANIMAL INDUSTRY—AN UP-TO-DATE DEPARTMENT.

THE VETERINARY ASSOCIATION OF NEW SOUTH WALES.

SYDNEY, October 18, 1913.

The Editor AMERICAN VETERINARY REVIEW:

DEAR SIR—It occurred to me that the enclosed article from the *Daily Telegraph*, one of the leading daily papers of this city, might be of interest. It shows how the good work of veterinarians in one part of the world assists their brother professionals elsewhere by acting as a model to which attention can be drawn.

Yours faithfully,

MAX HENRY, M.R.C.V.S., B.V.S., Hon. Sec.

A MODEL FOR AUSTRALIA.

In a recent number of the AMERICAN VETERINARY REVIEW a writer refers to what he terms the National Veterinary Department of the U. S. A. By this he means the department which is officially styled the Bureau of Animal Industry, and which, under that name, has gained such a world-wide reputation for the efficiency of its administration and the brilliancy of many of the investigations carried out under its supervision. In the United States of America the Federal Department of Agriculture is divided into a number of bureaus, the chief of which are, in all but name and the major questions of policy, the heads of independent departments. Of these bureaus, that of animal industry is probably the best known, and all matters dealing with live stock are considered as coming within its scope, whether they be the breeding and management of stock generally, the investigation and control of disease, the quarantine of introduced stock, the inspection of meat, or the purity of milk. It shows in probably its highest development the practical application of the truth that it is undesirable to separate the State's work amongst healthy stock from the State's work amongst dis-

eased stock, as the two must obviously so often overlap, and where two equal authorities overlap confusion results.

The aspect of the bureau's activities which has come most forcibly before our notice recently is its work in the eradication of the cattle tick and tick fever, to study which a Royal Commission was recently sent from this country. In the last annual report of the bureau, received here, the release of thousands of square miles from quarantine is notified, that is to say, the bureau is of the opinion that ticks have been eradicated from those areas. The report generally shows that the brilliant band of veterinarians who control the board have carried out equally good work in other directions. In meat inspection the Federal department deals only, as in Australia, with meat for export, and this inspection was practically forced on the United States Government by the outcry following the revelations of the conditions of the great slaughter-houses, just as the Australian Government was practically forced by the outcry in connection with worm nodules and the demands of oversea countries for efficient inspection to put into force our present more or less complete system. Along with the examination of meat are carried out investigations into the various diseased conditions met with, and also into coloring matters, preservatives, etc., used in the preparation of meat food products. It is not sufficiently recognized in Australia that the installation of a really efficient system of meat inspection pays handsomely as an advertisement.

Amongst the diseases of stock into which extensive investigations are recorded during the year under review, are Malta fever in goats, " measles " in beef, swine fever, the ever-interesting tuberculosis in cattle, the prevention of tetanus, which causes a constant mortality amongst horses in the central-western districts of this State, and chronic bacterial dysentery of cattle, which is suspected of having been introduced into Australia. In other ways, such as the carrying out of breeding, experiments in various classes of stock, the bacterial contents of milk, and the effect of various forms of feed on the milk of cows, the bureau is evidently carrying out able work.

In looking at such an institution as the United States bureau, we must take into consideration the men who have made it and control it, to understand exactly why it occupies the position it does in the agricultural life of the country. The present chief of the bureau, as he is called, is a veterinarian of high standing as an administrator, Dr. Melvin, and it is largely owing to his work and that of another distinguished veterinarian, Dr. Salmon,

that the B. A. I. holds its present proud position. Associated with him in the disease section of his work are two veterinarians distinguished as pathologist and experimenters—Dr. Mohler, in charge of the pathological division, and Dr. Schroeder, in charge of the experiment station. Many of the names of other members of the staff are world-known amongst the scientific men of other countries, and although it will, of course, take some time before the staff of what is to be the Australian Bureau of Animal Industry can make its mark, we are sure that it only requires a little liberality in the way of salaries and a wise choice on the part of those responsible for making the appointments for the Commonwealth Government to obtain men who will leave names behind them equal to those of their American confrères.

There can be no doubt that in forming the proposed branch of the Federal Agricultural Bureau to deal with live stock the authorities might do worse than note the manner in which the Americans have built up and maintained this splendid department, since the conditions here are not unlike those in the United States. The scope of possible investigations by a strong Federal Veterinary Department is enormous in this State alone, and such widely spread affections as the western or melon blindness of horses would deserve considerable attention. Moreover, a Federal department could grapple especially well with the tick question, since its sphere of action would not stop at the border of any State, and much loss could be saved to New South Wales, were the question of pleuro-pneumonia in cattle made a Federal one, for the same reason.

BROOKLYN, N. Y., November 20, 1913.

Editors AMERICAN VETERINARY REVIEW, *New York City:*

GENTLEMEN—In the November issue of the REVIEW nine pages are occupied with the "Report of the Special Committee for the Detection of Glanders."

The chemical analysis of the various agents used in diagnosing glanders is comparatively unimportant to the busy practitioner. It is universally admitted in the veterinary profession that mallein is a perfectly reliable diagnostic agent in this disease. In the past sixteen years I have found it an infallible test.

Until the chemical analysis was disclosed in the article under

discussion I was not aware of its composition. I knew the unfailing results of its use as a test agent. My point is this: To the average busy veterinarian the chemical composition of these tests is not the important factor; it is the knowledge by competent practitioners that they *do* show the presence of glanders.

I cannot understand why the efforts of this committee should be limited to the "reduction" of glanders when it is known to the profession that the immediate destruction of the affected animal is the ONLY effective method of successfully stamping out this scourge.

There can be no "best method for the reduction of glanders." It must be bodily removed beyond the possibility of disseminating contagion, for while one horse walks our streets exhaling the germs of this disease, every animal in contact is highly liable to infection.

Why give space to "reduction"? An impossibility! It must be *stamped out.* And the stamping out must, to be effective, be accomplished on the spot where the case is found; not traveled the distance to the offal dock, as has been frequently done in Brooklyn; and the premises, harness, blankets, etc., etc., must be properly fumigated and disinfected.

If the prevailing methods of the Board of Health were suited to the crying needs of the day, why should the necessity exist for the destruction of eighteen horses in one stable and ten in another, as was recently the case? Why was not the *first* case discovered and dealt with summarily, thus saving great financial loss?

The department is well paid for periodic visits to all stables, for the very purpose of testing for glanders in its *latent* period. Were this mode of dealing with the disease successfully carried out, glanders would not to-day be on the increase, and the efforts of the department would not show the ignominious failure attending the handling of this disease, now evident.

Yours very truly,

L. McLEAN, M.R.C.V.S.

THE HIGH CLASS OF THE REVIEW APPRECIATED IN MICHIGAN.—In renewing his subscription, Dr. H. Haynes writes: "Please accept thanks for the *class* of the REVIEW during the past year, and our good wishes that success may crown your efforts in the future."

ARMY VETERINARY DEPARTMENT.

DEATH OF A FRIEND OF OURS.

Dr. Franz Hell, veterinary general of the German army, suddenly died from heart failure, on November 27, while lecturing to a class of veterinary staff officers, who were detailed for a short course at the Military Veterinary Academy at Berlin. The general was 64 years of age, but was considered to be of excellent health, so that his unexpected demise was a shock to his many admirers in the German army.

The personality and career of Dr. Hell were notable. Tall and handsomely built, of clear and decisive mind, a scholar, he was possessed of a broad knowledge of affairs veterinary at home and abroad. Besides, nature had endowed him with a heart full of human kindliness, and his cordial manners and fascinating conversation captured the listener at once. Those who knew him long showed a sort of reverence towards him.

Graduating at the Military Veterinary Academy at Berlin in 1870, he went through the latter part of the Franco-Prussian War, and then became an assistant veterinarian in a remount station. Here he was soon recognized as an exceptionally keen judge of horses, so that in 1887 he was chosen as instructor in hippology at the Military Veterinary Academy. While in this position, he showed himself to be gifted in many ways. At that time conditions at the academy and in the army veterinary corps were turbulent, owing to a change of regime from a purely military supervision to a more professional. He threw his personality between the battling factions and stayed them. Perceiving that there was an immediate need of uniting all for a higher, common purpose, he founded an army veterinary journal in 1888 as a medium for contributions from the rich field of army veterinary practice, and he succeeded in turning the attention of his army colleagues away from strife towards scientific labors. He also secured authority to establish an army bacteriological laboratory, wherein veterinary officers could secure special information and help, and undertake certain lines of research work. He himself gave the example by plunging energetically into an

investigation of the various micro-organisms supposed to cause the influenza of horses and made himself a name as a noted pathologist.

In 1895 he was promoted to major in the veterinary corps and attached to the staff of an army corps, and in 1908 he was selected as veterinary general, a newly created rank. In this position he was in command of the army veterinary corps, as also director of the Military Veterinary Academy, himself de-

Generalveterinär Dr. Franz Hell.

livering the lectures on "Special Horse-Breeding for the Army." How skilfully and successfully he took up the reins of this doubly responsible position is now being commented upon in German veterinary journals. He had been decorated by the Emperor with several orders of merit.

The burial services, as described from abroad, were exceptionally touching, owing to the general love shown the deceased. Emperor William sent a floral tribute in the shape of a laurel wreath with the dedication: "Died on the field of honor."

I have taken it upon myself to chronicle the foregoing, thinking that it might inspire those of our friends who are now bat-

tling for the improvement of our own army veterinary service. I further perform a duty by making the following statement: When visiting Berlin in November, 1912, I called on Dr. Hell to pay my respects to him as the head of the German army veterinary corps. I had gone abroad to observe and to learn, and avoided everywhere to comment upon our veterinary troubles at home. But, almost at once, Dr. Hell turned the conversation to the conditions of our army veterinary service. He knew of Huidekoper and Hoskins, and, excepting details, he thoroughly understood our situation, to my great surprise. When I asked for information regarding the working of the German veterinary corps, he explained the regulations with perfect frankness. He also showed large maps, giving the organization of the veterinary corps of *all* armies of the world. There was a blank left for the U. S. army, which he hoped to be able to fill out soon. When, a month later, I wished good-bye to him, he said with feeling:

"Please convey to your comrades in the U. S. army the assurance of my deep interest in your struggle for recognition, and I pray that you may soon be successful. When you win you will find yourself cemented together into a corps, and then your good work shall be recognized by your army, as it has been recognized by all others. This is sure to come, and then your army will wonder why you were not given sooner the right of liberty in your chosen professional work."

I had no opportunity to deliver this message, scattered as we are over all the states and the insular possessions, but I cannot withhold it any longer. I have also requested the editor to give us the likeness of our dead friend, now resting unto eternity after a well-spent life, so full of sympathy that he knew no boundaries of earthly empires.

OLAF SCHWARTZKOPF.

RETIRED ON ACCOUNT OF ILL-HEALTH.—Dr. Jno. Spencer has retired from the Northwestern Hog Cholera Serum Manufacturing Company at So. St. Paul, Minnesota, on account of ill-health. In expressing sympathy for the doctor in his illness, and a hope that he may be speedily restored to health, the REVIEW voices the sentiment of the entire profession.

THE NORWICH PHARMACAL COMPANY'S CHANGE OF ADDRESS.—This drug house has changed the address of its New York City branch, from 60 Beekman street to 57-59 East 11th street.

SOCIETY MEETINGS.

UNITED STATES LIVE STOCK SANITARY ASSOCIATION.

The 17th annual meeting of the United States Live Stock Sanitary Association was opened in one of the assembly rooms of the Hotel Sherman, Chicago, Ill., by President Bahnsen, December 2, 1913, at 10 a. m.

The president introduced Dr. Colwell, president of the Chicago Medical Society, who in a sincere manner complimented the association on the high character of the work which it is carrying on and assured us of the growing appreciation of our worth by the medical profession and the general public.

Secretary Ferguson announced that Dr. Colwell and other representatives of the Chicago Medical Society had requested an audience to arrange if possible a joint meeting, whereby one of the days of our next meeting, if held in Chicago, could be given over to the discussion of correlated subjects. Later, during the meeting, Drs. Colwell, Evans and Black, in behalf of the Medical Society and Milk Commission, extended very courteously an invitation to join them, and suggested that the president of the U. S. Live Stock Sanitary Association appoint a committee, which would take up the matter with a committee from the Medical Society and arrange for holding a public meeting where speakers from both associations would discuss food inspection, particularly meat inspection, and also that an arrangement be made for a demonstration as to methods by which our meat inspection is carried out at the abattoirs.

The reading and discussion of papers were carried out practically in the order as presented on the program, which was as follows:

[NOTE]—The REVIEW was represented at the above meeting by Dr. John F. De Vine, of *staff*, to whom its readers are indebted for this interesting report of its proceedings.

"U. S. Government Meat Inspection," V. A. Moore, Cornell University; "Investigations with Swamp Fever," L. Van Es, North Dakota; "Measles in Live Stock and Its Relation to Rural Sanitary Conditions," B. H. Ransom, Washington, D. C.; "Comparative Value of Various Tests for Glanders," J. R. Mohler and Adolph Eichhorn, Washington, D. C.; "Methods of Controlling Glanders in New York State, J. F. DeVine, New York; "The Control of Hog Cholera—A Review of Four Months' Work by the Bureau of Animal Industry," M. Dorset, Washington, D. C.; "Safest Point at Which to Inject Hog Cholera Serum," W. H. Chrisman, Virginia; "How May a State Most Effectively Combat Hog Cholera?" J. W. Connaway, Missouri; "Necessary Equipment of State Laboratories for the Production of Hog Cholera Serum," Paul Fischer, Ohio; free discussion of above topics and all phases of hog cholera questions open to the meeting; "Demonstration Exhibit," A. T. Peters, Illinois; "The Purity of Farm Water Supply and Practical Methods of Insuring Clean Drinking Water for Live Stock," H. A. Whittaker, Minnesota State Board of Health; "Effects of Poor Ventilation on the Health of Animals," C. C. Lipp, South Dakota; "Elimination of Sources of Contamination in Milk," Prof. W. D. Frost, University of Wisconsin; "Consideration of Report of the National Commission on Milk Standards," presented by M. P. Ravenel, Wisconsin; "The Present Status of the Control of Tuberculosis by Vaccination," S. H. Gilliland and C. J. Marshall, Pennsylvania; "The Possibilities and Limitations of the Intra-Dermal Test for Bovine Tuberculosis," C. M. Haring, University of California; "Delayed Reaction Following Injection of Tuberculin," J. G. Wills, New York; "Bovine Tuberculosis in Illinois—Modern Method of Handling in Pure-Bred Herds," O. E. Dyson, Illinois; "Proper Basis for Inter-State Recognition of Health Certificates," S. H. Ward, Minnesota; "Present and Future Attitude of the Railroads Toward Live Stock Sanitary Control Work," F. S. Brooks, general live stock agent, Santa Fe Railway; "Control of Hog Cholera by Slaughter Methods," Dr. Geo. Hilton, chief veterinary inspector for Canada; "Necessary Regulations for Inspection and Disinfection of Horses and Mules for Inter-State Shipment," C. E. Cotton, Minnesota; "Official Inspections on Inter-State Cattle," C. J. Marshall and S. H. Gilliland, Pennsylvania; "Suggestions for Improvement in Method of Certifying to

Health of Animals Shipped from Canadian Provinces into the United States," W. J. Butler, Montana, W. F. Crewe, North Dakota, Jas. I. Gibson, Iowa, and O. H. Eliason, Wisconsin; "Reasons Why Some Infectious Diseases Have Not Been Eradicated," C. A. Cary, Alabama; "The Most Successful Methods of Tick Eradication," Geo. R. White and J. A. Kiernan, Tennessee.

The lack of discussion was noticeable and comments on the loss of this part of the meeting were heard frequently throughout the convention halls, until some of the members attempted to remedy it by at least starting discussions on the various papers.

As a result of this effort the paper by Dr. Dorset on hog cholera was freely discussed. It was Dr. Dorset's opinion that both the serum and simultaneous treatment have virtue, but must be carried on in addition to the recognized cardinal principles of sanitation. In the control of hog cholera Dr. Conway placed education and sanitation first and serum last. Dr. Fischer described briefly the arrangement and equipment of the Ohio serum plant, which has been completed at a cost of $100,000 and is said to be one of the most ideal in this country.

A paper by Dr. Shem on the control of hog cholera in Germany was read by Dr. Stange.

The paper prepared by Drs. Gilliland and Marshall on tuberculosis and vaccination was presented by Dr. Gilliland. Among other things this paper tended to show that the use of tuberculin only produced toxic immunity and not immunity against the tubercle bacilli, but that vaccination of living bacilli increased the immunity against natural infection; he stated that there are some problems yet to be worked out, such as the questions of early exposure to infection and the duration of the immunity period; also that vaccinated animals are certainly for a time—say, four to six weeks after vaccination—more susceptible to infection than unvaccinated animals, but that after this hypersensitive period the resistance is surely increased, it is still a question whether the immunity is carried sufficiently long to be of practical value. Continuing the immunity by repeated vaccination of living tubercle bacilli is considered unwise, as the living organisms appear in the products.

The conclusions drawn were that animals should be immediately removed at birth from all sources of contamination and during a period for eight weeks following vaccination especial care should be taken as to the possibility of exposure to con-

tagion, that after this period there is a pronounced increase in immunity for a period of probably two years.

The paper by Dr. George Hilton on the control of hog cholera in Canada by slaughter methods was discussed, some being of the opinion that this method seemed hardly feasible where valuable pure-blood hogs predominate and where hog cholera is extensive.

The question of disinfection for hog cholera brought forth from Dr. Dorset a statement which must have been interesting to every one, and was particularly so to the writer. Dr. Dorset stated that in his opinion carbolic acid was not a satisfactory disinfectant for the control of hog cholera, as blood kept six weeks in contact with a two per cent. solution of carbolic acid was found to be still virulent. Dr. Dorset prefers a three per cent. solution of compound cresole. The necessity of burning all carcasses seemed to be agreed on as the only safe method of disposal. The burning of frame pens and the liming of infected yards and fields, followed by plowing, is apparently a satisfactory way of controlling the contagion.

Mr. F. S. Brooks' remarks on railroad co-operation were warmly received, and we predict a marked improvement in our live stock movements, the exasperating annoyance of which under past conditions can only be realized by those directly interested.

Following several delayed reports, the election of officers was taken up. Dr. S. H. Ward, of Minnesota, was chosen president, and when called upon for a speech, proved that the honors had not awed his humor. Prof. Ferguson was again enthusiastically chosen to fill the office which he has so commendably and kindly taken charge of for so many years.

Following Prof. Ferguson's enthusiastic remarks on the association's future, G. Ed. Leech, of Minnesota fame, moved a vote of thanks for the able and congenial assistant secretary. "To the manner born," we all responded with a rising vote. Leech's exuberance again asserted itself and called for a speech, and the young lady's prompt retort, suggesting that it be in order to have Dr. Leech taken from the room, brought forth such a burst of applause that it was evident that "she had made a speech."

Thursday, December 4, being the last day of the meeting, and the work of the meeting now completed, President-elect Ward declared the 17th annual meeting, which was one of the most successful meetings of the association ever held, adjourned.

PRESIDENT WM. M. BURSON'S ADDRESS BEFORE THE GEORGIA STATE VETERINARY ASSOCIATION.

Gentlemen of the Georgia State Veterinary Association—It is with great pleasure that I rise to address you to-day. At the last annual meeting I was honored by election to the office of President; and while the duties of the office are not irksome I appreciate very much the confidence in me as expressed by the Association.

The veterinary profession is young in the South. While there are among you some who have been located here for many years, the average veterinarian of Georgia is either a newcomer to the State within the last five years or is a recent graduate.

The properly qualified veterinarian is being appreciated at his true worth by Georgia farmers and live stock owners more and more as time rolls on. I am sorry to state, however, that there are many farmers in the State who never saw, much less employed, a properly qualified veterinary practitioner.

This condition, I may also state, is undergoing a rapid change. The many influences which are at work on the development and protection of Georgia's live stock industries are in great measure to be credited with the increasing popularity of the veterinary practitioner through acquainting the live stock owning public with some features of veterinary work. In this connection I may mention the work in tick eradication which for several years has been in progress by the U. S. Bureau of Animal Industry in cooperation with the State Veterinarian and the support and encouragement of the work by the State College of Agriculture and various mercantile organizations. As an example of what is being accomplished in this line, I may state that three years ago several head of cattle of the College herd died of tick fever, and outbreaks of the disease were common throughout this and adjoining counties. The College herds have now been free of ticks for two years, and this and several other counties have been freed of ticks and released from federal quarantine. Tick fever is now unknown throughout these counties, and the cattle industries therein are placed on a better basis.

Tick eradication is the first great step necessary for the establishment of a well developed and profitable cattle industry throughout the South and should have not only the approval but the hearty support of the veterinary profession. The great

shortage of cattle throughout the United States has drawn attention to the cattle raising opportunities of the South and has resulted in enhanced interest in cattle by the southern farmers. It is well that this interest be encouraged in order that the work may be carried on more rapidly in the future than in the past.

The manufacture of hog cholera serum by the College of Agriculture and its distribution by the State Veterinarian.

The various rules and regulations of the State Department of Agriculture governing the shipments, into and within the State, of cattle and other animals.

The work in live stock improvement being carried on by several railroads of the State, notably, The Southern Railway and The Central of Georgia.

Last but not least the distribution of pure bred and high grade live stock throughout the State by and through the influence of the State College of Agriculture and farm demonstration agents.

Any and all influences tending toward the increased interest in more and better live stock may be cited as being conducive to the betterment of opportunities for the veterinary practitioners. The value of live stock on Georgia farms increased from $35,200,000 in 1900 to $78,118,000 in 1910, an increase of more than 120 per cent.

The increase in numbers and value is proof of fact of increased demand for the services of properly qualified men.

Some Georgia cities have come to the realization that municipalities require the assistance of the veterinary profession in the proper performance of the duties of their Departments of Health. Already three cities have installed municipal meat and dairy inspection under qualified veterinarians and I am informed that several other cities of the State anticipate the early inauguration of similar systems of inspection.

The work of inspection of abattoirs and dairies throughout the State by officials of the State Department of Agriculture has shown the need of the establishment of this work in many localities. In this line of work the profession does the general public a great favor. "He who guards the nation's food supply is indeed a public benefactor."

The illegal practitioner we have with us always. He and his kind are present in considerable numbers in this and every other State. His elimination from the field is largely dependent upon the education of the live stock owners and the rendering of service of which he is not capable. All possible influence should

be exerted to keep out of his hands those medicines and biological products used by qualified veterinarians.

The advertising quack and charlatan who flaunts his wares in the face of the reading public from the pages of agricultural and live stock papers must be fought at every opportunity. Some few papers have taken a stand against such advertising and have thereby voluntarily reduced their income. Such papers are of great value to the profession and deserve its hearty support. I may mention here one distinctly southern publication of this class; *The Progressive Farmer,* published in Raleigh, N. C., and Memphis, Tenn., of which our eminent colleague, Dr. Tait Butler is editor. I have been informed that the stand taken by this paper reduced its advertising business to the extent of $20,000 annually.

I would like to see this organization pass a resolution of commendatory nature *and forward a copy to Dr. Butler.*

During recent years biological products in great variety have come into general use in the practice of veterinary medicine. The great and sudden popularity of these preparations resulted in the placing on the market by unscrupulous persons of products of little or no value. This condition called for legislative interference. I have pleasure in stating that Georgia and Alabama were among the first States to pass bills regulating the sale of these products. The recent legislation by the Congress providing for regulation and inspection of plants preparing these biological preparations will do much to provide for the practitioner a more reliable supply.

The veterinarians of the South have the opportunity of doing great work not only in aiding in the development and protection of the live stock industries, but also in conserving the health of rural as well as urban populations. As a sanitarian the practitioner is qualified to give the farmer advice concerning farm and home sanitation. He is able to offer advice concerning the construction and arrangement of dairy barns and milk houses. He can instruct in regard to the things necessary to prevent contamination of the water supply. He can inform the farmer concerning the dangers incident to the improper disposal of sewage materials. He can point out to the owner the dangers to himself and family of the presence of animals affected with diseases and parasites transmissible to people. In fact, I know of no field of human endeavor which offers greater opportunities for beneficial service than is granted to members of the veterinary profession.

The greatest thing in life is the rendering of service to others.

The greatest man is he who has been enabled to render the most service to humanity.

Meetings such as this are beneficial in an instructional way and serve to bring together the members of the profession for closer acquaintance and better fellowship. Don't be a clam. Open up and freely discuss the matters brought before the meeting. If you know of something new and good, out with it, that all may be benefited. If it is information you seek, speak up and let us discuss the problem. Perhaps we may be able to solve it.

I hope all who are here will be able to go home with the feeling that what he has seen and heard while here has benefited him and made him a better veterinarian, and with the firm resolve to take a livelier interest than ever before in the Georgia State Veterinary Association.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

At the St. Cloud Hotel, Syracuse, N. Y., on November 25, 1913, was held the fourth semi-annual meeting of the Central New York Veterinary Medical Association. The following members were present: Dr. W. G. Hollingworth, Dr. H. A. Turner, Dr. W. B. Switzer, Dr. F. E. York, Dr. J. A. Pendergast, Dr. L. M. Currie, Dr. L. G. Moore, Dr. D. C. Papworth, Dr. W. M. Pendergast, Dr. E. E. Cole, Dr. J. G. Hill, Dr. E. E. Dooling, Dr. Frank Morrow, Dr. W. L. Clark, Dr. C. R. Baldwin, Dr. E. D. Hayden, Dr. R. C. Hurlburt, Dr. R. M. Weightman, Dr. A. H. Ide, Dr. J. C. Stevens, Dr. J. V. Townsend, Dr. A. E. Merry, Dr. E. W. Fitch, Dr. C. E. Morris, Dr. J. K. Bosshart. M. A. Switzer, attorney for the association, was also present, and the guests were: Dr. P. A. Fish, of the New York State Veterinary College, Dr. J. G. Wills, chief veterinarian of the State Department of Agriculture, Dr. J. H. Taylor, Henrietta, Dr. W. L. Baker, Buffalo, F. J. Switzer, Fulton, W. W. Otto, representing Sharp & Smith, and M. F. Allen, representing DeVoe-Havers Company. Dr. C. R. Guile of Fulton, Dr. W. F. Burleigh of Oneida and Dr. F. D. Markham of Port Leyden were present and presented applications for membership, which were favorably acted upon.

The matter of the prosecution of illegal practitioners was discussed at length and resolutions were passed authorizing the prosecuting committee to immediately commence proceedings against one illegal practitioner, evidence of whose practice had been secured, and providing for the prosecutions of others upon the production of necessary evidence.

The visitors were given the privilege of the floor and took part in the discussion of papers as well as in other matters of interest to the members. Papers were presented as follows:

"Johne's Disease," Dr. Charles E. Morris; "Case Report on Rupture of the Stomach in Gray Gelding," Dr. W. L. Clark; "Future Veterinary Legislation or Duties of the Veterinarian of the Future,"* Dr. W. G. Hollingworth; "Intussuseption of Ileum in Cow," Dr. J. K. Bosshart; "Some Interesting Cases in Canine Practice," Dr. W. M. Pendergast.

The papers were all very interesting and were well discussed. Following the completion of the regular program, an informal discussion of matters of interest to the profession was held, at which time the value of various drugs, as demonstrated in every-day practice, was given careful attention.

Preceding the business session, a clinic was held at the infirmary of Dr. H. A. Turner, in South Salina street. The first operation was that of cunean tenectomy for the relief of spavin lameness, performed upon the left leg of a large bay gelding by Dr. A. H. Ide of Lowville, N. Y. Median neurectomy upon the right arm of a bay gelding for the relief of navicular disease was performed by Dr. F. E. York of Earlville, who also performed a similar operation upon the right arm of a large white mare, for the purpose of relieving lameness from a low ring-bone. The ears of a Boston bull terrier were cropped by Dr. W. L. Baker of Buffalo. The dog was anesthetized by a mixture of chloroform and ether, the ears brought together over the head and marked and cut with scissors. The last operation for the relief of laryngeal stridor was performed upon a large black mare by Dr. York of Earlville.

A banquet was held at the St. Cloud Hotel following the meeting. All things considered, this was the best meeting held by the association since its organization. A pleasing spirit of harmony prevails among the veterinarians of the territory, for which this society was organized, and its success is thus assured.

W. B. SWITZER, V.S., Secretary.

* Published elsewhere in this issue.